

# The Mining Journal,

## RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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London, Saturday, May 16, 1874.

[WITH SUPPLEMENT.] { PRICE FIVEPENCE.

{ PER ANNUM, BY POST, 21 4s.

**M**R. JAMES H. CROFTS, STOCK AND SHARE BROKER,  
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.  
(SUCCESSOR TO JAMES CROFTS).

Established 1842.

BUSINESS transacted in every description of BRITISH and FOREIGN Stocks and Shares, and in all COLLIERY and IRON Shares.

SPECIAL BUSINESS in shares not having a general market value.

Loans negotiated upon marketable Mining Shares and other approved Stocks. The principal mining papers filed every week for the use of clients. A Price List issued every evening at Five o'clock.

SPECIAL BUSINESS in the following COLLIERIES:—Cardiff and Swansea, Cleethorpes, New Sharston, Silestone Fall, United Bituminous, Welsh Freehold, and Hockley Hall.

BUSINESS in Glaistead Quarry Shares.

MINES:—Emma, Flagstaff, Old Treburtett, Richmond, Tankerville, Van Consols, West Tankerville.

Bankers: City Bank, London; South Cornwall Bank, St. Austell.

**M**RS. W. H. BUMPUS, STOCK AND SHARE DEALER,  
44, THREADNEEDLE STREET, LONDON, E.C., has FOR SALE the  
following SHARES, at prices annexed, free of commission:—

150 Aberdare	70 Frontino, 5s.	25 Richmond, £7 3s.
30 Ashton, £2 18s. 9d.	25 Grogwinion, 4s. 3d.	150 Rica (Gold), 7s. 6d.
50 Bampfylde	5 Herodfoot.	25 South Carn Brea, £3 1/2
40 Bog, 21s.	40 Ladywell, 23 1s. 3d.	20 Sweetland Ck., £4 6s.
20 Birdseye Crk., £3 11s 3d	60 Last Chance, £2 6s. 3d.	100 So. Aurora, 13s. 6d.
50 Chontales, 15s. 6d.	150 Malpaso, 13s. 6d.	15 Tankerville, £9 7s.
75 Chapel House Colliery	50 Marke Valley, 14s.	15 Tincroft.
(£5 per ft.), £4 1/2.	75 Malabar, 15s. 6d.	75 Tecoma.
10 Cape Copper, £20 2s.	5 Minera, £16 1/2.	50 Utal, 21s. 6d.
1 Carr. Brea.	20 New Dolcoath, 11s.	40 Unit. Mexican, £3 16s.
60 Cle Hill Coll., 11s. 6d	40 New Quebra, 23 11s 3d	5 Van, £25 1/2.
25 Cedar Creek, £2 1/2.	70 Old Treburtett, 17s. 6d.	30 Van Consols, £4 8s. 9d.
2 Dolcoath, £4 7s.	50 Penstruthal, 18s.	50 W. Tankerville, 35s.
50 Emma (Silver), £2 6s 3d	100 Prince of Wales, 11s.	100 West Maria, 13s.
10 East Lovell.	100 Plymlimon, 6s. 9d.	40 Wh. Mary Hute, £3.
25 East Cardon, 19s. 6d.	50 Perkins Beach, 8s. 9d.	20 Wh. Crebore, £2 1/2.
40 Eberhardt, £3 1/2.	25 Pennerley, 26s. 6d.	15 Wheat Grenville, £5 1/2.
25 Flagstaff, £4.	10 Roman Grav., £16 1/2.	10 Roman Pever, 20s.
100 Furze Hill.	70 Rookhope, 20s.	

London Office of Reference for Drake Walls and South Rosecar Mines.

W. H. B. transacts business in every description of Stocks and Shares at the best market prices, and free of commission.

Bankers: National Provincial Bank of England, E.C.

**M**RS. E. J. BARTLETT, STOCK AND SHARE DEALER,  
No. 80, GREAT ST. HELEN'S, LONDON, E.C., transacts business at  
best prices in every description of security.

Colliery Shares, well selected, will afford good returns. E. J. B. has for sale some fully paid shares in thoroughly *bond fide* undertakings, with a guarantee of 10 per cent. Full particulars on application.

**M**RS. JOHN RISLEY (SWORN), STOCK AND SHARE  
BROKER, 77, CORNHILL, LONDON, E.C.,  
Brokerage on Buying or Selling shares of £4 and upwards, 1 1/2 per cent., and 1s. per share on each under £4.

**F**ERDINAND R. KIRK, STOCK BROKER,  
5, BIRCHIN LANE, E.C.

Welsh Freehold, United Bituminous, and Glaistead Quarry Shares are worth buying.

**N**EWCASTLE CHEMICAL.—SPECIAL BUSINESS as BUYER or SELLER.

BUSINESS at close prices in—Cape Copper, Eries, Egyptians, Atlantes, Flagstaff, Chapel House, Cle Hill.

BUYERS of New Sharston and Dunraven Adare are invited to communicate. Consols, Foreign Bonds, Railways, and every security quote on Change bought and sold. Fortnightly accounts opened on references given being given.

Bankers: London and Westminster, and City Bank.

**M**RS. WILLIAM WARD  
(Late WARD and LITTLEWOOD),  
CROSBY HOUSE, 95, BISHOPSGATE STREET WITHIN, E.C.,  
DEALS IN ALL KINDS OF STOCKS AND SHARES, for cash or on the account.

**M**RS. HENRY MANSELL, STOCK AND SHARE DEALER,  
14, GREAT WINCHESTER STREET, LONDON, E.C.  
H. M. recommends the purchase of COLORADO TERRIBLE shares.

**M**RS. W. TREGELLAS, 122, BISHOPSGATE STREET  
WITHIN, E.C.,  
Deals in all descriptions of Stocks and Shares at close market prices.

**M**ESSRS. W. DUNN AND CO., STOCK AND SHARE  
DEALERS, 3 and 4, GREAT WINCHESTER STREET BUILDINGS,  
LONDON, E.C.

Orders received and commissions executed.

Bankers: National Provincial Bank of England.

W. D. and Co. have FOR SALE the following at net prices:—

20 Birdseye Creek, £3 15s	50 Old Treburtett, 15s 9d	5 Tankerville, £9 7s. 6d.
1 Dolcoath, £4 6s	25 Pennerley, 21s. 9d.	10 Trumpet Cons., £1 15s.
5 East Lovell, £2 10s.	50 Prince of Wales, 10s 6d	5 W. Chiverton, £2 17s 6d.
5 East Pool, £10.	50 Roman Grav., £16 1/2.	50 West Maria, 11s.
13 Grogwinion, £1 17s 6d	25 Bookhouse, 16s. 6d.	15 Wheat Agar, £1 12s 6d.
20 Hindston Down, 18s.	10 So. Conduor, £3 17s 6d	5 Wh. Kitty (St. Agnes), £8 5s.
20 Ludwyk, 23.	40 So. Roman Grav., 10s.	10 Port Phillip, 9s. 6d.
10 Lovell (Tin), £1 15s.	25 South Toclearne, 10s.	100 West Caradon, 13s.

**H**ARLAND AND CO., STOCK AND SHARE DEALERS,  
235 and 236, GRESHAM HOUSE, LONDON, E.C.,  
Transact business in every description of Stocks and Shares at net prices, and recommend investment in—Chapel House, Altami, Cardiff and Swansea, Welsh Freehold, United Bituminous, and Cle Hill Collieries—Tyllwyd, Bog, Denbighshire, West Tankerville, Tankerville, Lovell, Roman Gravels, Sweetland Creek, and Circular and Daily Price List gratis.

Bankers: London and County Bank.

**M**ESSRS. MILLER AND CO., STOCK AND SHARE DEALERS,  
6 and 62, QUEEN'S BUILDINGS, QUEEN VICTORIA STREET,  
LONDON, E.C., PUBLISH A DAILY and WEEKLY LIST of Prices of Funds,  
Government Securities, Banks, Railways (home and foreign), Mines, Docks, Gas, Telegraph, Waterworks, and miscellaneous companies shares.

Messrs. MILLER and Co. have Special Business in the THAMES and GENERAL LIGHTERAGE and TRANSIT COMPANY (Limited) at close market prices; and are sellers of Eberhardt, East Lovell, Emma, Roman Gravels, Last Chance, Bampfylde, and New Quebra.

All orders punctually attended to, for cash or account.

Bankers: Prescott, Grote, Cave, and Co., Threadneedle-street, London, E.C.

**M**RS. GEORGE BUDGE, STOCK AND SHARE DEALER,  
No. 4, ROYAL EXCHANGE BUILDINGS, LONDON, E.C.

MESSRS. WM. MARLBOROUGH AND CO.,  
29, BISHOPSGATE STREET WITHIN, LONDON, E.C. (Established  
18 years), have FOR SALE the following SHARES at prices annexed:—

20 Asheton, £3 1s. 3d.	20 Great Laxey, £11 1/2.	35 S. Carn Brea, £3.
20 Almadra, 16s. 3d.	25 Hindston Down, 18s.	20 Sweetland Creek, £4 6s.
20 Bog, 18s. 9d.	25 Herodfoot.	50 So. Rom. Grav., 9s. 6d.
20 Birdseye Crk., £3 11s 3d	10 Herodfoot, £4 6s. 3d.	50 St. Dennis Consols, £1
20 Blaenau, £3 1/2.	25 Ladywell, 23.	50 So. Last Chance, £1 1/2.
20 Bedf. United, 16s 3d	25 Malabar, 14s. 6d.	50 Sp. Agar, £1 12s 6d.
20 Colorado, £4.	25 Marke Valley, 7s. 6d.	50 Sweetland, £4.
20 Cane Brea, £4 5s.	25 Mid-Moonta, 26s.	200 Silksone Fall, £4.
20 Cape Copper, £2 23 1/2.	25 New Dolcoath, 15s.	40 Sierr. Buttes, £1 1/2.
20 Cedar Creek, 42s.	25 New Quebra, 43.	20 Tyllwyd, 17s.
20 Chontales, 15s.	25 Old Treburtett, 14s. 9d.	200 Wheal Crebore, £2 1/2.
20 Cook's Kitchen, 49 1/2.	25 Pennerley, 26s. 6d.	20 Wheal Tregoss, £1.
20 Denbighshire, 12s 3d.	25 Perkin, 8s. 9d.	100 Wheal Mary, £2 1/2.
20 East Lovell, £1 20s.	25 Frontino, 9s. 9d.	25 Perkin, £1 1/2.
20 East Pool, £10.	25 Ludwyk, 23.	100 Wheal Pever, £1.
20 Hindston Down, 18s.	25 Malabar, 13s. 6d.	15 West Bassett, £10.
20 Ludwyk, 23.	25 Marke Valley, 9s.	20 Parys Mountain, 7s 6d.
20 Lovell (Tin), £1 15s.	25 New Dolcoath, 11s. 3d.	25 Port Phillip, 9s. 6d.

20 Ludwyk, 23.

20 Malpaso, 13s. 6d.

20 Minera, 5 Minera.

20 New Dolcoath, 11s. 3d.

20 Old Treburtett, 14s. 9d.

20 Pennerley, 26s. 6d.

20 Parys Mountain, 7s 6d.

20 Roman Grav., £16 1/2.

20 Rookhope, 20s.

20 Roman Pever, 20s.

20 Roman Tregoss, 20s.

20 Roman Pever, 20s.

20 Roman Tregoss, 20s.

FORTY-FIRST ANNUAL REPORT OF THE  
NATIONAL PROVINCIAL BANK OF ENGLAND,

MAY 14th, 1874.

C A P I T A L .

Subscribed capital, £2,550,000.	In 10,000 shares of £100 each, £42 paid.	Capital paid-up at 31st Dec., 1873, £1,319,959
	77,500 shares of £20 each, £12 paid.	Since received 41 Total..... £1,350,000

RESERVE FUND, £600,000.

NUMBER OF SHAREHOLDERS, 3312.

DIRECTORS.  
Right Hon. LORD ERNEST AUGUSTUS CHARLES BRUDENELL BRUCE, M.P., 7, St. George's place, Hyde Park Corner, S.W.  
GEORGE HANBURY FIELD, Esq., 67, Ecclestone-square.  
JOHN OLIVER HANSON, Esq., 4, Dorset-square.  
JOHN KINGSTON, Esq., 6, Crosby-square.  
DUNCAN MACDONALD, Esq., Weybank Lodge, Guildford, Surrey.  
HENRY PAUL, Esq., 33, Devonshire-place, Portland place, W.  
ALEXANDER ROBERTSON, Esq., 20, Grafton-street, Berkeley-square, London, and the College, Elgin, N.B.  
JOHN STEWART, Esq., 29, Throgmorton-street.  
Sir JAMES SIBBALD DAVID SCOTT, Bart., 18, Cornwall Gardens, Queen's Gate.  
RICHARD BLANEY WADE, Esq., 13, Seymour-street, Portman-square, W.  
ROBERT WIGRAM, Esq., Blackwall Yard.  
Hon. ELIOT THOMAS YORKE, 15, Park-street, Grosvenor-square, W.

JOINT GENERAL MANAGERS.  
EDWARD ATKINSON, Esq., and WILLIAM HOLT, Esq., Bishopsgate-street, corner of Threadneedle street, London.

SOLICITOR.  
CHARLES NORRIS WILDE, Esq., College Hill, London.

RICHARD BLANEY WADE, Esq., in the chair.

REPORT.

The directors have the pleasure of reporting that the business conducted by the Bank during the past year has been followed by the most satisfactory results. Out of the realised profits they propose to add the sum of £50,000 to the reserved fund, which will then amount to £600,000, and they recommend that in addition to the usual payment of 10 per cent. for the half-year, a bonus of 9 per cent. be paid, making the division for the year at the rate of 25 per cent. per annum.

It will be observed that the directors propose to appropriate £50,000 to the fund formed in 1871 for the relief of distressed widows and orphan children of the officers of the establishment, a course which they feel confident will be approved by the proprietors. The amount hitherto annually distributed has been about £120 from the existing fund, but it is confidently expected that the above grant, with the additional interest arising from the balance of the officers' guarantee fund, together with the voluntary contributions now being freely given to it by the officers, will form a sufficient sum annually to relieve such urgent cases of distress as may be brought before the directors.

After these payments, together with the usual bonus of 10 per cent. paid to the officers, the amount of undivided profits carried forward will be £50,000 0s. 7d., of which £45,368 17s. 10d. are derived from the accounts of 1872.

The profits thus proposed to be distributed are due not only to the steady progress of the Bank in public estimation, and its general prosperity at all its branches but likewise to the fact that the year was extremely favourable to banking operations. The trade of the country was prosperous; the demand for money very brisk; and notwithstanding the prevalence of high rates for money, and the numerous changes in the Bank of England rate, the failures, with few exceptions, were of an unimportant character, showing that trade in general had been conducted on a sound basis.

The highest rate of the Bank of England was 9 per cent., and the lowest 3 per cent., and the average for the year was £4 15s. 9d., being the highest since 1865. It is remarkable that twenty-four changes occurred in the rate, the greatest number hitherto recorded in any one year.

Among the causes for so many changes may be mentioned the final adjustment of the French war indemnity, financial disturbances in Austria and America, an out-flow of gold on German account, and a deficiency in our harvest, causing larger importations of grain than usual.

The following is the summary of the operations for the year, submitted in the usual form:—

Rest, or undivided profits, at 31st December, 1872, as exhibited at the annual meeting in May, 1873—viz.: £669,400 0 0 Less bonus declared and paid in cash in July, 1873..... 104,400 0 0 £565,000 0 0 And less amount carried to credit of building fund account..... 15,000 0 0 £550,000 0 0 Net profits of 1873, after making allowance for bad and doubtful debts, and bonus to officers..... 397,135 2 9 Making..... 694,135 2 9 Add undivided profits from 1872..... 45,368 17 10 Total..... £992,504 0 7 Deduct: Dividend on company's stock, paid July, 1873— £54,000 0 0 Ditto ditto January, 1874— 54,000 0 0 Bonus of 8 per cent. ditto..... 108,000 0 0 Undivided profits to next year..... 50,000 0 7—268,004 0 7 Leaving..... £726,500 0 0

Out of these profits the directors propose to declare, in addition to the foregoing dividends and bonus paid to proprietors as above stated, a further bonus of 9 per cent. in July next, making a division of profits in 1873 in all of 25 per cent. upon the paid-up capital, free of income tax, amounting to..... 121,500 0 0 £63,000 0 0 Less amount carried to the benevolent fund..... 5,000 0 0 £60,000 0 0 Leaving reserve invested in Government securities..... £60,000 0 0

Those proprietors who are conversant with the history of the establishment will remember that on four occasions the directors have deemed it expedient to exercise the powers with which they are entrusted, and to issue new shares. Since the last issue there has been an addition to the deposits of nearly £7,000,000; consequently the directors, acting upon the principle by which they have been hitherto guided—viz., of enlarging the security afforded to the public in proportion as the business increases—consider that the time has arrived for a further increase of capital. They have, therefore, decided to make a further issue of 28,125 shares of 20s. each, to be offered at 10% premium, payable by two equal installments in July next and July, 1875, to the proprietors whose names shall stand upon the share register on the 23rd May instant, in the following proportions—viz:

1st.—LARGE SHARES.

One large to be entitled to  $\frac{1}{2}$  new shares.  
Two do. do. 13 $\frac{1}{2}$  "  
Three do. do. 25% "  
Four do. do. 3 $\frac{1}{2}$  "  
Five do. do. 4 $\frac{1}{2}$  "  
Six do. do. 5 $\frac{1}{2}$  "  
Seven do. do. 6 $\frac{1}{2}$  "  
Eight do. do. 7 "

2nd.—SMALL SHARES.

One small share to be entitled to  $\frac{1}{4}$  new share.  
Two do. do.  $\frac{1}{2}$  "  
Three do. do.  $\frac{3}{4}$  "  
Four do. do. 1 "

Upon the new issue it is intended that £12 should be called up in the following manner:—

1st instalment of £1 and premium of £5  
Making £6 to be paid on 15th July next.

2nd instalment of £2 do. on 15th January, 1875.

3rd instalment of £1  $\frac{1}{2}$  do. on 15th July, 1875.

and premium of £5  $\frac{1}{2}$  do. on 15th January, 1876.

4th do. of £2 do. on 15th January, 1876.

5th do. of £2 do. on 15th July, 1876.

6th do. of £2 do. on 15th January, 1877.

7th do. of £2 do. on 15th July, 1877.

Letters of allotment will be issued as soon as possible after the 23rd inst., together with a memorandum for the fractional shares. The proprietors must either sell the fractional shares so allotted to them, or purchase such other fractional share or shares as will make one whole share, the memorandum for which must be lodged on or before the 1st of August next, when scrip will be issued for the whole number of new shares given to each proprietor, and the operation be thus completed. Such instalment will only be entitled to the dividend payable in January next, after which date, however, it will carry dividend and bonus. The second and other instalments on shares will be dealt with in a similar manner to the first.

The directors propose to add the whole of the premium which will be received on these shares to the reserve fund, and to invest it as heretofore in Government securities. In the year 1877, therefore, the paid-up capital of the bank will amount to £1,887,500, and in 1878 the reserve fund to £881,500, and consequently there is every prospect that before long it will reach the sum of one million.

At the extraordinary meeting about to be held the directors will recommend that this society shall be registered as an unlimited company under the Companies Acts 1862 and 1873. The leading joint stock banks in London, and many in the country, have recently been so registered. The chief advantages will be that, while the principle of unlimited liability will remain unchanged, the liability of the executors of deceased partners and other retiring shareholders will be limited to one year, and that the property belonging to the bank will be held in its corporate capacity.

The directors also recommend the proprietors at the said meeting to divide each of the original £100 shares in the society, on which £42 has been paid, into two shares of £50 each, on each of which £21 shall be taken to have been paid up, a measure which they believe will have the effect of more nearly equalising the proportionate value of the two classes of shares.

The following directors go out of office by rotation, but being eligible for re-election offer themselves accordingly:—

Right Hon. Lord ERNEST AUGUSTUS CHARLES B. BRUCE, M.P.

HENRY PAUL, Esq.

RICHARD BLANEY WADE, Esq.

NATIONAL PROVINCIAL BANK OF ENGLAND.

31ST DECEMBER, 1873.

LIABILITIES.

To paid-up capital .....	£1,349,959 0 0
Amount due by the Bank on deposits, &c. ....	21,822,175 19 3
Acceptances .....	547,313 0 2
Reserve fund, 1st January, 1873 .....	£550,000 0 0
Addition, 31st December, 1873 .....	50,000 0 0 =
Profit and loss balance .....	176,504 0 7
Total .....	£24,495,952 0 0

CR. ASSETS.

By cash in hand—at Bank of England and Branches, call and short notices .....	£4,298,748 7 3
Government Securities .....	2,933,948 5 0
Indian Government and other securities, debentures, &c. ....	2,281,597 9 9
Bills discounted, loans, &c. ....	14,569,180 1 0
Freehold premises, &c., in London and country—	
Total amount .....	£528,561 3 3
Less, at credit of building fund .....	111,103 6 3 = 412,457 17 0
Total .....	£24,495,952 0 0

The above report having been read—it was.

Resolved.—That the same be adopted and printed for the use of the proprietors.

Resolved.—That the Right Hon. Lord Ernest Augustus Charles B. Bruce, M.P., Henry Paul, Esq., and Richard Blaney Wade, Esq., be re-elected directors of the company.

Resolved.—That considering the great increase which has taken place in the business of the Bank, and the profits of the shareholders since the general meeting in 1873 fixed the annual remuneration of the directors at £3000, the time has fully arrived for reconsidering the propriety of increasing such remuneration, and this meeting is of opinion that it should be raised to the sum of £10,000. (This resolution, in conformity with the Deed of Settlement, will be submitted for confirmation to an extraordinary general meeting, which will be summoned for the 18th June, 1874).

Resolved.—That the best thanks of the proprietors be presented to the directors for their very successful management of the affairs of the company.

Resolved.—That the best thanks of the proprietors be given to Edward Atkinson, and William Holt, Esq., the general managers, and to the branch managers and other officers of the company, for their efficient services.

Resolved.—That the best thanks of the meeting be presented to the Chairman for his able conduct in the chair.

Extracted from the minutes by

E. ATKINSON, W. HOLT, } Joint Managers.

Extraordinary meeting, held in pursuance of notice given in the "London Gazette" of April 21, 1874.

Resolved.—That this society be registered as an unlimited company under the Companies Acts, 1862 and 1867, and that the directors be, and they are hereby authorised (when and as they may deem it judicious) to do all acts, matters, and things necessary or proper for procuring this society to be so registered, or conducive to that object.

Resolved.—That each of the original £100 shares in this society, on which £42 has been paid up, be divided into two £50 shares, on each of which £21 shall be taken to have been paid up, and that Clause 3 and every other clause in the Deed of Settlement relative to the original capital of the society be altered so that in future the original capital of the society shall consist of 20,000 shares £50 each, instead of 10,000 shares of £100 each.

Resolved.—That for every two of such £50 shares as aforesaid which shall be held by one proprietor, such proprietor shall be considered a proprietor of one original share of £100, and one such share only, with respect to those qualifications, rights, and privileges which by the Deed of Settlement are required and given to the proprietors of original shares of £100 each, and are dependent on a specified number of those shares.

Extracted from the minutes by

E. ATKINSON, W. HOLT, } Joint Managers.

ABRIDGED PROSPECTUS.

ISSUE OF 750 GUARANTEED TEN PER CENT. FIRST MORTGAGE DEBENTURES OF £20 EACH OF THE

BLENCOWE CONSOLS TIN MINING COMPANY (LIMITED).

Capital £50,000, in 5000 Shares of £10 each.

Fully subscribed Capital £32,010.

Price of issue—£20 per Debenture.

The first payment of interest will be made on the 30th August, 1874.

The interest for three years is guaranteed to the holders of the Debentures by an investment in Consols to be made in the names of two trustees.

The Debentures are redeemable at the expiration of three years from the 31st May, 1874, or any time during that period, on the directors giving three months' notice.

The money raised by these Debentures is to enable the directors to further develop the property, and to increase the present out-turn.

TRUSTEES FOR THE DEBENTURE HOLDERS.

NATHANIEL G. LAMBERT, Esq., M.P.

Major-General ALBERT FYTCHE, C.S.I.

Forms of application can be obtained at the offices of the company, 16, Great Winchester-street, London.

SECRETARY—WILLIAM BATTYE.

16, GREAT WINCHESTER STREET, LONDON, E.C.

solicitor, and at the offices of the company, Abchurch Chambers, Abchurch-yard, London, E.C.

Should no allotment be made, the deposits will be returned in full.

THE PORT NIGEL LEAD COMPANY (LIMITED).

Notice is hereby given, that the LIST OF APPLICATIONS for SHARES in the above will CLOSE on THURSDAY, the 21st inst., for LONDON, and on FRIDAY, the 22d inst., for the COUNTRY.

By Order, SYDNEY W. JACKSON, Secretary (pro tem.), Abchurch Chambers, Abchurch-yard, London, E.C., May 9th, 1874.

THE BOULDER VALLEY COLLIERIES COMPANY OF COLORADO (LIMITED).

&lt;p

such unprecedented strides is beyond all doubt. The official returns of Colorado show that between 1870 and 1873 the population nearly quadrupled, and the value of the property more than doubled in the same time.  
Professor Richardson's and Captain Mitchell's reports and valuations, together with the schedule of the property attached to the estate, plans, and also certificates and letters from Governor Elbert, of Colorado; from United States Surveyor-General, W. H. Lessig; from the Hon. G. T. Clark, United States Territorial Treasurer of Colorado; from J. G. Jones, Esq., Superintendent of the Boulder Valley Coal Company, &c., relating to the value and importance of the collieries and other portions of the estates, and copies of the Memorandum and Articles of Association of the company can be seen at the offices of the company, and of the solicitor.

**THE CAPITAL OF THE COMPANY** consists of—  
52,000 shares of £5 each, 30,000 of which are to be reserved for exchange debentures, at the option of the debenture holders, such option to be exercisable at any time within three years from the incorporation of the company..... £160,000  
20,000 fully paid shares of £5 each, to be allotted to vendor in part payment of the purchase-money, all dividends on these shares shall accrue during the period of three years from the incorporation of the company (30th April, 1874) to be the property of the company, and applied in or towards redemption of debentures..... 100,000  
£260,000

The price agreed to be paid to the vendor for the purchase of the property is £230,000—  
Cash, part proceeds of debenture bonds ..... £130,000  
20,000 deferred shares of £5 each, as above ..... 100,000  
Total purchase money ..... 230,000  
Balance ..... 30,000  
£260,000

Power is reserved to make no allotment, and return amounts subscribed. Where no allotment is made, the deposit will be returned without deduction, and should a less number of bonds be allotted than applied for, the surplus deposit will be applied towards payment of the amount due on allotment. Prospects and forms of application may be obtained of the Secretary, at the offices of the company; and of the Bunkers; and of all the principal London and Provincial Stockbrokers.

**THE BOULDER VALLEY COLLIERIES COMPANY OF COLORADO (LIMITED).**

The APPLICATIONS for DEBENTURE BONDS will CLOSE on SATURDAY, the 23rd inst., for LONDON, and MONDAY, the 25th, for the COUNTRY, Applications must be made and transmitted, with a remittance of £10 in respect of each Bond, to the Bankers of the Trustees, Messrs. BROWN, JANSON, and Co., 82, Abchurch-lane, Lombard street, London, E.C.

### NORTHAMPTONSHIRE IRON ORE.

### NELL BRIDGE IRON ORE COMPANY (LIMITED).

IN THE PARISH OF KING'S SUTTON, COUNTY OF NORTHAMPTON. MR. H. H. THOMPSON, of 9, Tokenhouse-yard, London, E.C., is AUTHORISED to RECEIVE SUBSCRIPTIONS at par for 500 Shares, of £5 each, in the NELL BRIDGE IRON ORE COMPANY (LIMITED), which has just acquired a valuable mine upon highly favourable terms. The company has only the net amount expended for completing purchase, the transferor to receive £200 bonus when the company has earned a dividend of 20 per cent.

This mine is situated on the Great Western Railway, about four miles from Banbury, on the line to Oxford, and possesses the advantage of a tramway to railway, with siding thereto, capable of standing 50 trucks.

The sum of £555 was paid to the Great Western Company for constructing this siding; £700 expended for viaduct, shops, and tunnel under road, and upwards of £1500 laid out in earthworks, while the plant, exclusive of the siding, is now estimated as worth £500 for taking away to sell.

The ore is purely dolitic, which is increasing in demand for mixing with other, especially refractory, ores. It will flux itself. The average yield is 30 per cent. metallic iron, and 33 per cent. lime.

The strata are 5 ft. to 9 ft. deep, and as the earth or overburden is not more than 2 ft., the greatest depth to bottom of ore is only about 7 ft. to 8 ft. from surface.

The ore is easily worked, and requires only picks and shovels. Everything necessary for working extensively is in place and in perfect order.

The area is 101 acres. Lease 21 years, from August, 1869. The annual rental, which merges in the royalty of 5d. per ton of 22½ cwt. of 120 lbs. to the cwt. is £300 for the next three years, and £450 for the remainder of term. For land used for the purposes of the company a surface rent of 2d. per acre per annum is payable. Tramway lease same period as for the mine. Rent £50, also merging into a royalty of 1d. (one penny) per ton of 2400 lbs. up to 24,000 tons, and ½d. (one halfpenny) per ton in excess.

Occupation rent, £10 per annum.

Great Western Railway, £10 per annum.

#### OUTLAY.

	6s. 0d. per ton.
Railway rate to South Staffordshire	2s. 10d. to 3s. 2d. per ton.
Royalties, 5d. in 1d.	0 6 "
Getting and putting into trucks, including horse hire,	
poor rates, &c.	1 1 "
Truck hire	0 9 "
Commission on sale of ore and management	0 6 "
Total	£13,552 per annum.

RECEIPTS.

Sale of 1000 tons per week at only 6s. 10d. per ton and taking 45 weeks per annum, to allow amply for wet weather and holidays ..... £15,372

Less discount of 2½ per cent. for cash at a month, less railway rate..... 180 — £15,192

Profit per annum ..... £ 1,840

London expenses ..... 250

Total ..... £1,590

Or upwards of 54 per cent. upon the capital now issued, and 27 per cent. on the entire capital of £5000. This calculating a sale of only 1000 tons per week, at 6s. 10d. per ton; but the directors are of opinion that the sales will average a much higher price, and that they will be able to largely increase the quantity.

**SCHEDULE OF PLANT TO BELONG TO THE COMPANY.**

38 railway trucks of 1 ton each.

40 sleepers laid on tramway.

100 sleepers in stock.

550 ft. of rails laid on tramway.

550 ft. of rails in stock.

300 doz. nails for tramway.

Picks, shovels, rakes, bars, wheelbarrows, planks, grease, tar, &c.

Weightbridge (4 tons) average.

The above is independent of the siding at railway.

Mr. CHARLES CHICK, of Roade, Northampton, undertakes the management and general superintendence of the mine, including travelling expenses and commission on the sales of ore, for 6d. per ton on the ore sold.

The remuneration of the directors is left to be fixed by the shareholders.

Intending shareholders will be furnished with an order to visit and inspect the mine, which can be reached from London in 2½ hours; and samples of the ore may be seen at the offices of the company, 40, Finsbury-circus, E.C., where prospects and forms of application for shares may be obtained; also of H. H. THOMPSON, Esq., Broker, 9, Tokenhouse-yard, London, E.C.; and of H. J. GODFREY, Esq., Solicitor, 165, Fenchurch-street, London, E.C.

**PERPETUAL MOTION SUPERSEDED.**—An invention, which promises entirely to eclipse the spiritualistic lever of Mr. W. Crookes, F.R.S., as a source of motive power, is now being introduced in the United States by a Philadelphian—Mr. John W. Keely—who claims to be able to produce, without heat, electricity, galvanism, magnetism, or chemicals a cold vapour, which will yield a pressure of 10,000 lbs. per square inch. Reporting upon the invention, Mr. Chas. H. Haswell, civil and marine engineer of New York City, and formerly Engineer-in-Chief, United States Navy, certifies that Mr. Keely developed a cold vapour of a density that enabled it, when admitted to a cylinder having a piston 11-16th in. diameter, to raise a weight of 150 lbs. suspended from a compound lever, connected as 1 to 42, with the weight of the lever and the friction due to the absence of a knife-edge or rotating joint, was fully equal to an energy of 7800 lbs. per square inch. The inventor alleges that, by the introduction within the apparatus of a very small volume of water, he can generate a vapour having an expansive energy of from 1 to 20,000 lbs. per square inch in the brief period of a few seconds, the only obstacle to the generation of this vapour in great volume being the capacity of materials to retain it without rupture.

**COMPRESSING MACHINERY.**—Mr. R. S. WALKER, of Gresham House, Old Broad-street, has patented some improvements in machinery for compressing and forming into blocks peat, artificial fuel, and other materials. The provisional specification describes a machine which consists of a horizontal oblong hollow body of cast or wrought iron or steel, each end of which is divided into a nest of oblong moulds open at both ends, but the inner ends sharpened to cutting edges; between these two nests is a space open at the top, over which to be placed the hopper which feeds in the materials to be operated upon; in the space between the moulds is a piston or ram, which makes its stroke from the cutting edges of one nest of moulds to the cutting edges of the other nest, behind which piston or ram the materials fall of their own gravity, to be driven into the body by the returning stroke.

**NEW FUEL.**—Mr. L. J. MARTIN, of Paris, has patented some improvements in the manufacture of artificial fuel, and in the production of gas for illuminating and heating purposes. The improvements relate to the production of gas for illuminating and heating purposes from lignite, peat, or dried wood saturated with a hydrocarbon, the resulting product forming a fuel possessing great calorific power and density, also to the production of charcoal from the residue of the manufacture of gas from such matters.

**LONDON GENERAL OMNIBUS COMPANY.**—Traffic receipts for the week ending May 10, 1871, £85. 1d.

### THE MINING JOURNAL.

#### Registration of New Companies.

The following joint-stock companies have been duly registered:—

**WIGGINTON HALL COLLIERY COMPANY (LIMITED).**—Capital 30,000/., in 5d. shares. To take over a colliery near St. Martin's, Oswestry. The subscribers (who take one share each) are W. S. Hart, Woodville-terrace, Liverpool; J. E. Thomas, Hall; F. Richmond, Bootle, Liverpool; J. H. Luke, St. Helen's; A. S. Masters, Harrington street, Liverpool; J. W. Copland, Waterloo, Lancashire; H. Palmer, Hanley.

**EAST RHW GOCH SLATE QUARRY COMPANY (LIMITED).**—Capital 50,000/., in 5d. shares. To acquire a quarry in the parish of Dolwyddelan Carnarvon. The subscribers (who take one share each) are—W. Joy, 56, Coleman-street; A. C. Cummings, Edgeware-road; W. Gallop, Oxford-street; J. Vallon, Portmadoc; C. Dazeys, 49, Leadenhall-street; Alfred Hayles, 56, Coleman-street; W. F. Dell, Millman-street, Bedford-row.

**MARITIME AND GENERAL BANK (LIMITED).**—Capital 50,000/., in 20,000 "A" shares of 1/., and 6000 "B" shares of 5d. each. The subscribers to this company are—J. Sunley, 8, London-street, 100; J. O. Surtees, Chertsey, 100; T. J. Fallon, 1, Arundel-gardens, W., 500; F. Bigg, Bridge-street, Blackfriars, 25; E. N. Hudson, The Crescent, Minoris, 10; D. W. Dowling, 27, St. George's-square, 100; G. Aitken, The Crescent, 10; A. Griffith, 17, Abchurch-lane.

**GILBERT AND CHAUDIERE GOLD FIELDS COMPANY OF CANADA (LIMITED).**—Capital 125,000/., in 20 shares. To take over the business of the Gilbert and Chaudier Gold Fields and Mining Company of Canada (Limited). The subscribers (who take one share each) are—W. H. Spratt, Walbrook-buildings; R. Town, Ormond-terrace, Regent's Park; E. Applegarth, Palmerston-buildings; F. J. Gold, Preston, Sussex; C. Cadogan, 17, Abchurch-lane; J. Bengtson, 84, Lombard-street; A. Griffith, 17, Abchurch-lane.

**LIVE STOCK INSURANCE COMPANY OF GREAT BRITAIN (LIMITED).**—Capital 100,000/., in 1/ shares. To carry on business as insurers of live stock. The subscribers (who take one share each) are—R. T. Coupland, 39, Moorgate-street; T. Crisp, 6, Old Jewry; C. L. Atterbury, Southend-House, Bliford; C. W. Gilman, Norwich; T. Duckham, Baysham Court, Ross; W. Smith, Norwich; F. Ormeau, Brondesbury Villas, Kilburn.

**PROFESSIONAL ASSOCIATION (LIMITED).**—Capital 50,000/., in 12 shares. The subscribers (who take 10 shares each) are—C. Parker, 78, Coleman-street; W. Sharpe, Peckham-square, Kensington; J. R. Ross, Hastings; J. Fairbairn, Fen-church-street; R. T. King, Carlton Grove, Peckham; B. Gregory, Kings' Arms-yard; H. N. Barnes, Mountnes, Essex; A. Head, 32, Moorgate-street.

**SILVER RIDGE LEAD MINING COMPANY (LIMITED).**—Capital 60,000/., in 1/ shares. For mining in Kirkbrightshire. The subscribers (who take one share each) are Alfred Twigg, Selby; Thomas Field, Crown-court, E.C.; J. Ashe, Rose Bank, Manchester; Richard Williams, Gunner, Cornwall; F. W. Reisten, Grove-street, Liverpool; F. Healing, Eastham, Cheshire; V. W. Jones, Liverpool.

**MESSRS. JOHN WAGSTAFF AND COMPANY (LIMITED).**—Capital 60,000/., in 5d. shares. This is a Lancashire cotton-spinning business.

**UNION FINANCE COMPANY (LIMITED).**—Capital 100,000/., in 10 shares. This is a Bristol Finance Company. The subscribers are—S. Green, Clifton, Bristol, 100; W. Saddler, Woodfield, Cleveland, 100; H. T. Nash, Port-shead, 700; H. Chapman, Clevedon, 250; E. F. Portledge, Bristol, 100; F. Castle, Clifton, 100; S. Joyce, Bristol, 100.

**JOHN NAYLOR AND COMPANY (LIMITED).**—Capital 24,960/., in 12 shares. To take over the Whining Moor and Westgate Moor Collieries, near Wakefield, Yorkshire. The subscribers are—J. Naylor, Horbury, 200; Thomas Westwood, Ossett, 200; H. Westwood, Ossett, 210; J. Spaight, Ossett, 100; J. Austin, 200; Robert Smith, Ossett, 50; A. Brettoner, Ossett, 10.

**MARITIME AND GENERAL BANK (LIMITED).**—Capital 50,000/., in 20,000 "A" shares of 1/., and 6000 "B" shares of 5d. each. To carry on the general business of a banking company. The subscribers are—J. Sunley, 8, London-street, 100; J. O. Surtees, Chertsey, 100; T. J. Fallon, 1, Arundel-gardens, W., 500; F. Bigg, Bridge-street, Blackfriars, 25; E. N. Hudson, The Crescent, Minoris, 10; D. W. Dowling, 27, St. George's-square, 100; G. Aitken, The Crescent, 10, 10; A. Griffith, 17, Abchurch-lane.

**UNIVERSAL LAND AND ESTATE COMPANY (LIMITED).**—Capital 25,000/., in 5d. shares. To take over cotton spinning business in Lancashire.

**MADDEN COUGHLIN SPINNING COMPANY (LIMITED).**—Capital 30,000/., in 5d. shares. To take over cotton spinning business in Lancashire.

**CLARIDGE AND CO. (LIMITED).**—Capital 26,000/., in 10 shares. To take over the Phoenix Foundry and Engineering Works at Bilston.

#### THE COAL CONSUMERS' ASSOCIATION.

The fact of the second ordinary general meeting of this company, held under the able presidency of Lieut.-Col. TREVENEN J. HOLLAND, C.B., at the Cannon-street Hotel, on Thursday, was of more than four hours' duration renders it impracticable to devote the necessary space in the *Mining Journal* for a detailed report of the proceedings, more especially as the concern scarcely comes within the category of an ordinary mining or trading company. The directors stated in the report they presented that they have endeavoured to make a judicious outlay of the capital of the association, and are pleased to be able to inform the shareholders that all their investments in collieries have proved so far satisfactory that the present value of these collieries, as shown in the circular, and very lately assessed by practical engineers, is now considerably in excess of the price paid for them, notwithstanding the general depreciation in the value of colliery property throughout the United Kingdom. The directors could not have acquired these properties on the advantageous terms they did had they been fully developed at the time of purchase. It, therefore, became necessary to expend a considerable amount of the capital of the association in increasing the output, which is yet far from sufficient.

The whole of the first issue of 50,000 shares having been taken up, the directors, on Oct. 1 last, made a second issue at 5 per cent. premium. As each share, however, is allotted, a further obligation to deliver coal is entailed, thus hampering arrangements for developing the collieries and their output. Under these circumstances, it has been thought advisable by the directors, under the powers vested in them by the Articles of Association, to borrow 50,000/., by the issue of mortgage debentures, forming a first charge upon the assets of the association. These debentures are being daily applied for and allotted as applications are received, and the directors feel confident that when they are all allotted, ample funds will be available, not only to enter into possession of the Silkstone Main Colliery, but to fully develop all the other collieries belonging to the association, thereby considerably increasing the output, placing a much larger quantity of coal at disposal for prompt delivery on demand; and, as the cost of management will not be increased, enabling the directors to reduce the price of coal to shareholders. The profit and loss account showed a profit of £452, 10s. 9d. on the first five months' operations. It will be a matter of consideration for the shareholders whether it is more advisable for them to receive their coal at actual cost price hereafter, till profits can be realised by the sale of surplus coal to the public, or with an extra charge upon each ton, to be refunded at the end of the year, in the shape of dividend, as originally proposed. Since the business of the association was commenced upwards of 35,000 tons of coal have been delivered to the shareholders; 44 depots have been opened, in addition to which coal has been supplied at 188 stations by the truck load. It has been impossible to control all these depots and stations, and to meet the requirements of the families of more than 7000 shareholders and their many friends (to whom they have given coal tickets) without occasional delay and cause of complaint. Unforeseen circumstances prevented the delivery being as regular as could be desired. A rise in the railway rates and truck rent of 2s. 5d. per ton increased the aggregate so much that it became necessary, on Jan. 1 last, to advance the price of coal 1s. per ton to the shareholders on the north of the Thames, and 2s. per ton to those on the south of the Thames, to cover all expenses incurred in the delivery of coal to metropolitan consumers at the house door. The directors, however, anticipate that this increase in price is only temporary, and that when they have capital at their disposal, unfettered with the obligation to deliver coal, they will be able so materially to increase the output at the several collieries, and to bring such a large supply of coal from Silkstone Main that they will shortly be able to reduce the price of coal to shareholders.

The reception and adoption of the report and accounts was proposed by the CHAIRMAN in an eloquent address, the most important statements in which, considered from a business point of view, was that experience had taught them that it was a mistake to offer to supply a ton of coal for each 1/ share, it should have been a ton for each 2/ share, and that it would have been better to have acquired one or two going collieries instead of several undeveloped ones. It was now, perhaps, too late to remedy this error, but when the debentures were subscribed they might be able to dispose of some of those they had, and thus create a reserve fund. He explained that the only way in which the 10 per cent. dividend could be paid was by charging the shareholders 2s. per ton more for their coal. As to the complaints of the quality and price of the coal, he admitted that in many cases there had been clear cause of complaint, the supplies had not been regular, and the quality had not been good, but in commencing an enterprise of this class it was next to impossible to overcome all of the many obstacles thrown in their way. He thought, however, that in some cases the complaint originated with servants who objected altogether to the co-operative principle, which supplied at low prices, and gave no perquisites. It was best not to judge the society by its first few months' operations.</p

for 2000/-, which were not matured yet.—The CHAIRMAN said it was not a bill, but rather in the nature of a cheque, and the security for that was held in Salt Lake City for 2000/- The only remittances they had had from Salt Lake City was 1000/- previous to the end of the year, 9000/- in another sum, and then there was this 2000/- cheque, which had not been paid yet. But the directors believed that the 2000/- would be paid; they were taking steps to have it paid.

Mr. SNELL: Whose cheque was the 2000/-?—The CHAIRMAN: Capt. Lucas's; we believe it to be perfectly good.—Mr. SNELL asked how it was that Mr. Attwood did not remit more money during the time he was working the mine?—The CHAIRMAN said the directors did not ask him to remit more, considering that all the money which could be raised out of the ore would be required to develop the mine and carry out explorations, and as Mr. Attwood had no large surplus there was no necessity for any remittances, and when the directors did ask him to remit, he sent first 1000/-, then 9000/-, and then 2000/- in a cheque. The directors were of opinion that perhaps Mr. Attwood made a slight mistake in the purchase of the 2000/- cheque, but he believed Mr. Attwood did it with the best intention, and did it to save the exchange. The directors had the firmest belief it would turn out all right, and that the company would not lose by it. He did not see what Mr. Snell wished to attach to the directors in connection with the remittances.

Mr. BURTON said that the time of gentlemen was valuable, and they would be glad to get to business. (Hear, hear.)

Mr. SNELL said he wanted to know why when Mr. Attwood sold ore he kept the money there instead of remitting it to England?

The CHAIRMAN said that supposing Mr. Attwood had remitted every pound which he had received for ore he would have done it at great expense to the company, and then if Mr. Attwood wanted money to conduct the explorations the directors must have sent money over to him, so it was far better for Mr. Attwood to use the money he got for the ore in the development of the mine. Beyond that, Mr. Attwood had no right to send money home until he was instructed so to do. The directors did what was best for the company in leaving the money there. (Hear, hear.)

A SHAREHOLDER asked whether the company was paying its debts in America or here?—The CHAIRMAN: We have no debts here, the debts are all in America.

Mr. STEWART said he wished to make one remark before the resolution for the adoption of the report and accounts was put. In regard to the very heavy expenses incurred, they were all very well when large dividends were being paid, and when it was that the mine would yield such very large returns; but now the object with the shareholders ought to be to put this company upon a proper footing, and in conformity with its present revenue. (Hear, hear.) A great deal had been done to run up this mine, and a great deal had also been done to run it down—(hear, hear)—but, however, he hoped that the shareholders would deal with the matter upon the absolute facts now before them. He thought the directors ought not to be condemned when they showed a surplus of 17,000/-, when the expenses had been very great. It was now for the shareholders to put their house in order, to re-constitute the board, reduce the expenses, get a smaller office, and keep the mine working as economically as possible out at Salt Lake, and then no doubt the mine would yield a fair return upon the present value of its capital. (Hear, hear.) He had purchased into the mine, and he wished to see a proper foundation laid for its future success, and he hoped the shareholders would apply themselves to this object. (Hear, hear.)

The CHAIRMAN said the principal expenses were the Salt Lake expenses, and he could not see how they could be reduced; at the same time, he thought they would be less in the future than in the past, as so much had been done already in re timbering, developing, and so on. As to the other expenses, however, out there he did not well see how they could be reduced.

Mr. STEWART said he thought the London expenses might be reduced—such as office rent, salaries, and so on. He also thought that a smaller board would be ample to manage the company. (Hear, hear.)

A SHAREHOLDER: As all the expenses are in America, why did you want 11,000/- sent here?—The CHAIRMAN said the directors thought the money market at Utah was unsafe, and that it was dangerous to allow a large balance to be out there. (Hear, hear.) One of the banks there suspended, and other banks were in questionable credit for some time.

The SHAREHOLDER: That is a reasonable answer.

Mr. ASTON asked whether Mr. Attwood had paid money to Mr. Park on behalf of the Illinois Tunnel?—A SHAREHOLDER said he also should like to have a little information respecting that tunnel?—The CHAIRMAN said that in December last the company was threatened with legal proceedings by the Illinois people, and that was one of the reasons why he went to New York, at very great inconvenience to himself, to endeavour to get this matter arranged; and he made an arrangement for the payment of the money, all of which was due. He made an arrangement which the company was given further time, and the payments would be made by instalments spread over the present year. One instalment was already paid.

Mr. ASTON said he wanted to know whether the money was paid direct to Mr. Park on account of the Illinois Tunnel Company?—The CHAIRMAN said it was not paid to Mr. Park. The directors gave bills; Mr. Haskin was the man to whom they gave bills.

Mr. ASTON asked whether it was not a fact that Mr. Park and the Illinois Tunnel Company were one and the same person?—The CHAIRMAN said that if Mr. Aston could help them to prove that, the directors would be very glad in view of his assistance.

Mr. ASTON asked whether it was not a fact that the Illinois claim was bought by Mr. Park?—The CHAIRMAN: I have heard the report.

Mr. ASTON: I should like Mr. Attwood to answer.—Mr. ATTWOOD: I have heard from several parties that Mr. Park had bought the Illinois claim, but have no proof.

Mr. ASTON: Have you heard any name mentioned in connection with the Illinois scheme except Mr. Park's?—Mr. ATTWOOD: Mr. Haskin's name has been mentioned.

A SHAREHOLDER: What is your belief about it?

A SHAREHOLDER asked of what use was "belief" without proof? (Hear, hear.)

Mr. E. L. PEMBERTON, M.P., said that this question of the tunnel scheme and the connection of the company with Mr. Park had formed the subject of great consideration by the board; they had consulted their solicitor about it, and the directors would be only too glad to be in possession of proof that Mr. Park and the Illinois Tunnel Company were identical. The directors expected further information upon the subject by every mail. His friend, Commander General Gardiner, had paid particular attention to this subject, and no doubt it would be the subject either of negotiation or litigation with Mr. Park. The directors had nothing whatever to conceal, but under the circumstances it was, perhaps, undesirable to discuss that point at the meeting. (Hear, hear.)

Mr. T. G. TAYLOR said that surely Mr. Attwood must know whether Mr. Park was in the Illinois Tunnel Company or not, and he should like that gentleman to state what he knew.

The CHAIRMAN said that Mr. Taylor was asking for an absolute statement from Mr. Attwood upon a point which it was absolutely impossible for Mr. Attwood to know. Mr. Attwood could only give an opinion from reports which he had heard, and could have no actual knowledge, neither had the directors, but the directors would be happy to receive that knowledge if any of the shareholders had it to give.

Mr. TAYLOR said he should like to hear the statement of Mr. Attwood himself on the point.

Mr. ATTWOOD: I have laboured under the impression for some time that Mr. Park did own that Illinois scheme, but I could get no proof. It is a common report.

Mr. ASTON asked whether the board were unanimous in proceeding against Mr. Park legally?—Mr. PEMBERTON: I believe so. Give us evidence, and we shall be only too glad to proceed.

The CHAIRMAN said the directors believed they had information, though the shareholders taxed them with not having information, but what was the use of belief in a court of law. (Hear, hear.) Before the directors spent the shareholders' money in Chancery they would require something more to go upon than Mr. Attwood's belief. (Cheers.) There must be positive facts. At present the directors had no such positive information, and they would not spend money in prosecuting Mr. Park, or anyone else, unless they had good grounds to go upon—some tangible evidence. If they did otherwise, the shareholders might turn upon the directors and say, "Why did you throw away our money in an absurd proceeding?" (Hear, hear.)

Mr. ASTON: Are the directors unanimous in fighting Mr. Park?—The CHAIRMAN: I believe the directors would be perfectly willing to prosecute Mr. Park, if they had any evidence of fraud, or anything to go upon, but so far they have none.

Mr. ASTON asked whether the directors had taken any steps to find it out?

The CHAIRMAN said that when Mr. Attwood was in America he made enquiries on the point, and since his return the solicitor, Mr. Bumpas, had the subject in hand, and the necessary enquiries were being made.

Mr. SNELL thought it was a marvellous thing for Mr. Park to come forward as he did and advance the money required to pay the dividends.

Mr. BURTON had no acquaintance whatever with Mr. Park, he had only listened to him attentively when he had given a flourishing statement of this mine. In his opinion either the shareholders or the directors themselves had begun that feeling of antagonism that now exists between Mr. Park and the company by causing him to retire from the board—that no doubt had excited his anger, and had entailed considerable sacrifice on the company. He wished to ask a question about that Illinois tunnel, which had cost the company so much money. Had Mr. Park been the adviser of the board in making the settlement that had been arrived at in that matter? If not, he thought they (the shareholders) had no right to enquire whether he had any interest in that claim; it seemed to him a private arrangement. At the same time he thought it was most unfortunate that the Chairman had been involved in the expenses to defray which the shareholders had to be kept out of a dividend. He concurred in the advisability of continuing the explorations of the property, and expressed the belief that eventually they would reap the benefit of such operations.

Mr. E. L. PEMBERTON, M.P., said there were two lights in which to view the matter of the Illinois Tunnel. In one view of the question many people had told the board that there was no such thing as a claim on the part of the Illinois tunnel. If that were the case they hoped to get back all the money expended in the settlement of that claim. Another statement was that Mr. Park had bought up the Illinois claim at a very low rate of discount. His opinion on that view of the matter was that was that statement correct Mr. Park could only charge the company what he had paid for it. (Hear, hear.)

Mr. WHITE proposed troubling the meeting with a very few remarks, and he hoped the effect of them might be to place their company in a more satisfactory position than it at present occupied. First, he desired to know of the gentlemen who had signed the circular whether they proposed carrying their intention of moving for the appointment of a committee of investigation into effect? (Yes, yes.) He wished them to point out in reply to an objection to that course raised by the board in the circular sent to the shareholders, to the effect that a committee had been appointed at the last meeting, that on their own showing that committee had ceased to exist, their labours being at an end.

Mr. ASTON observed that the committee appointed last year was one of conference; it was now, however, proposed to appoint a committee of investigation.

Mr. WHITE had made the remark simply with this object in view—that if the shareholders desired to appoint a committee on the present occasion they were not in any way to be prejudiced by the fact of a committee having been appointed last year. Now, in reference to that committee he wished to ask what was the reason of the retirement of so many of its members?

Major-General McCREA, in attempting to speak, was interrupted with loud cries of "One share." On silence being obtained he said:—I beg to say I hold 50 shares. (How long?)

Mr. WHITE said perhaps it would be better if he were to proceed with his questions, and leave them to be answered all at once. In his hand he held a newspaper—the Springfield Republican—which contained valuable information with reference to the earlier history of this mine, and the subsequent stages of its career. As, doubtless, many of the particulars were not known to the present meeting, he should proceed to read it at length. It was headed "Mr. Park and Emma," and was as follows:—"The mine was a good mine—a rich one; millions of gold and silver had been taken out of it; it is quite likely that millions more might yet come

from it. But it is not so good a mine as was represented in London, and it was not worth the money that was paid for it there. There is a strong flavour of 'put-up job' in the whole transaction, even for the accounts which the operators give of it themselves. Apparently this was about the story of it. Mr. Park took his mine over to London, introduced it to several prominent gentlemen inclined to money-making, including two or three Members of Parliament, and not counting Minister Schenck, and with their help found a man who was skilled in 'putting properties on the market.' And the bargain they soon came to seems to have been this:—Emma was accounted to be worth five millions of dollars, two millions cash were to be paid Mr. Park; other two-and-a-half millions, or half of the whole, helped to take in stock, and the other half million was to be spent in oiling the ways, or, in the language of the fraternity 'promoting' the operation. To make the thing a success, of course, with such a vast amount of stock to unload on the general public, it was necessary for all parties—the Americans who held half of the stock equally with the Englishmen, who proposed to put up the two millions of their amount of shares—that the property should seem not only to have the power of wealth, but to exhibit it continuously for some time in the development. Between the mine and its promoters this difficulty was well met. The mine had been so opened and worked as to place at hand great wealth; a million or more of ore was visible it was thus prepared and worked for fine exhibition, and immediate returns, at the expense of its continuous yield and permanent profit to the shareholders. Under this state of things, the mine yielding abundantly, and the money promptly forthcoming every month to the shareholders, the stock went up in the London market to \$150 per share. Mr. Park and his associates, both English and American, bought and sold freely, and things seemed very lively both in Salt Lake and in London. Early in the summer there was an accident, or cave in, at the mine, making considerable trouble, and causing a serious fall in the shares, but the promoters came promptly to the rescue, bought liberally at the reduced rates, restored confidence with continued dividends, and had the pleasure of seeing the stock go up again. So the year went round, and the little game went on. By the time the year had ended the probability is that Mr. Park and his friends had relieved themselves of their shares. Most likely, too, their original English associates had protected themselves from any possible change of circumstances. The mine apparently began to drop in production late in the fall, but Mr. Park nobly came to the rescue, and the dividends were not interrupted till the new year. No sooner was the year over, however, than the picture changed. The mine itself seemed to have come to naught; shares dropped sharply and suddenly on the London market; the bitten parties began to cry aloud. Indignation meetings were held; furious pamphlets written; Mr. Park's superintendent in the mine retired; and the 'subsequent proceedings interested' the American gentlemen 'no more.' But the following concluding statement, he (Mr. White) observed, was that to which he particularly desired to call the shareholders' attention:—"Meantime the mine was not absolutely worthless, or even a bad one, and there is no occasion to abandon it. It was sold on the strength of a rich pocket or deposit; it is now being worked on the vein in search of another. Probably it is still a good property; possibly it will turn out again a rich property." (Hear, hear.) Now, he was persuaded that the gentlemen who had the present management of their affairs were as anxious as the shareholders could possibly be that the company should prosper. He asked the meeting to extend to them a reasonable amount of indulgence and confidence, so that the interests of the company might not be injured by useless dissension; while, on the other hand, if they had not that confidence in their directors, the remedy was simple, and open to their adoption. (Hear, hear.) Passing on to notice the accounts, the speaker remarked that on looking at the balance sheet it would be seen that the expenses were out of all proportion to the revenue. The expenses at Salt Lake for provisions, wages, and general supplies, taking the ore in, to the railway, and salaries and expenses in London, amounted to within a few pounds of 50,000/- He desired to impress upon the present management, or, if a change were effected in the constitution of the board, upon the future directors, the absolute necessity of exercising the strictest economy in all departments of the company's operations. (Hear, hear.) He entirely endorsed the opinion of the directors that it was desirable to expand all the money realised as profit from working the mine in exploring the resources of their property."

Major-Gen. McCREA said he had been appointed—pressed to go as a member of the committee of conference, to study the interest of the shareholders, and there had been no question raised at that time as to the number of shares respectively held by the members of the committee. At the same time, he begged to state that the number of shares standing in his name was totally incorrect. A number of the statements made by the different speakers that day were utterly worthless and unreliable. He had heard Mr. Snell get up and make very lengthy and confused remarks, which he hoped were evidently intended to throw dust in the eyes of the shareholders; but he hoped the meeting would carefully consider them before accepting them as actual facts, because he was in a position to state that the majority of the statements made by Mr. Snell were totally incorrect.

Mr. SNELL: Why did not the Chairman say so?

Major-Gen. McCREA replied that the Chairman had said so as well as he could. The confusion created at the meeting had a purpose. Now, the first question put to him had been—Why the members of the committee of conference had gradually retired and left them with only four? Some of those who had retired had done so because they went abroad, and the others had resigned their office for similar reasons. But the remaining four members had attended the office of the company regularly, sometimes twice a week, for which they had received not a particle of remuneration. With regard to the present agitation, the object in view was, doubtless, to raise the shares to a fictitious value, so as to enable the men who had bought in for the purpose of speculating to get out at a profit. Otherwise, what could be the reason of a number of gentlemen coming forward professedly with the intention of serving the committee—gentlemen (he alluded to the shareholders who had signed the circular), who had not held a single share this time last year. (Cries of "You are wrong.")

A scene of great confusion and disorder then ensued consequent upon Major-Gen. McCrea, Mr. Snell, Mr. Aston, and others each loudly maintaining their respective statements. Something like order being restored,

Mr. McDONALD begged to address a few remarks to the meeting. In the first place, he desired the Chairman to verify the writing of a letter, which he handed across to the board of directors.

The CHAIRMAN, having examined the letter, said: I am almost sure it is Mr. Park's writing. Oh, yes! I see it is signed by Mr. Park.

Mr. McDONALD then went on to say that he saw in the directors' report the statement that if it had not been for the claims on the part of the Illinois Tunnel and Mr. Park, the company would be in a position to pay a dividend now.

The CHAIRMAN observed that the sum thus expended would have enabled the board to declare a dividend to an extent.

Mr. McDONALD said he also saw the statement that Mr. Anderson had gone out to New York, and had succeeded in making an arrangement for the settlement of the Illinois Tunnel claim. He wished to ask what those arrangements were; whether in such a form that they could get to the bottom of them? Because he believed there could be very little doubt that the whole concoction of this Emma Mine was the greatest swindle ever perpetrated on the London market. (Hear, hear.)

Mr. T. G. TAYLOR said that surely Mr. Attwood must know whether Mr. Park was in the Illinois Tunnel Company or not, and he should like that gentleman to state what he knew.

The CHAIRMAN said that Mr. Taylor was asking for an absolute statement from Mr. Attwood upon a point which it was absolutely impossible for Mr. Attwood to know. Mr. Attwood could only give an opinion from reports which he had heard, and could have no actual knowledge, neither had the directors, but the directors would be happy to receive that knowledge if any of the shareholders had it to give.

Mr. TAYLOR said he should like to hear the statement of Mr. Attwood himself on the point.

Mr. ATTWOOD: I have laboured under the impression for some time that Mr. Park did own that Illinois scheme, but I could get no proof. It is a common report.

Mr. ASTON asked whether the board were unanimous in proceeding against Mr. Park legally?—Mr. PEMBERTON: I believe so. Give us evidence, and we shall be only too glad to proceed.

The CHAIRMAN said the directors believed they had information, though the shareholders taxed them with not having information, but what was the use of belief in a court of law. (Hear, hear.) Before the directors spent the shareholders' money in Chancery they would require something more to go upon than Mr. Attwood's belief. (Cheers.) There must be positive facts. At present the directors had no such positive information, and they would not spend money in prosecuting Mr. Park, or anyone else, unless they had good grounds to go upon—some tangible evidence. If they did otherwise, the shareholders might turn upon the directors and say, "Why did you throw away our money in an absurd proceeding?" (Hear, hear.)

Mr. ASTON: Are the directors unanimous in fighting Mr. Park?—The CHAIRMAN: I believe the directors would be perfectly willing to prosecute Mr. Park, if they had any evidence of fraud, or anything to go upon, but so far they have none.

Mr. ASTON asked whether the directors had taken any steps to find it out?

The CHAIRMAN said that when Mr. Attwood was in America he made enquiries on the point, and since his return the solicitor, Mr. Bumpas, had the subject in hand, and the necessary enquiries were being made.

Mr. SNELL thought it was a marvellous thing for Mr. Park to come forward as he did and advance the money required to pay the dividends.

Mr. BURTON had no acquaintance whatever with Mr. Park, he had only listened to him attentively when he had given a flourishing statement of this mine. In his opinion either the shareholders or the directors themselves had begun that feeling of antagonism that now exists between Mr. Park and the company by causing him to retire from the board—that no doubt had excited his anger, and had entailed considerable sacrifice on the company. He wished to ask a question about that Illinois tunnel, which had cost the company so much money. Had Mr. Park been the adviser of the board in making the settlement that had been arrived at in that matter? If not, he thought they (the shareholders) had no right to enquire whether he had any interest in that claim; it seemed to him a private arrangement. At the same time he thought it was most unfortunate that the Chairman had been involved in the expenses to defray which the shareholders had to be kept out of a dividend. He concurred in the advisability of continuing the explorations of the property, and expressed the belief that eventually they would reap the benefit of such operations.

Mr. E. L. PEMBERTON, M.P., said there were two lights in which to view the matter of the Illinois Tunnel. In one view of the question many people had told the board that there was no such thing as a claim on the part of the Illinois tunnel. If that were the case they hoped to get back all the money expended in the settlement of that claim. Another statement was that Mr. Park had bought up the Illinois claim at a very low rate of discount. His opinion on that view of the matter was that was that statement correct Mr. Park could only charge the company what he had paid for it. (Hear, hear.)

Mr. WHITE proposed troubling the meeting with a very few remarks, and he hoped the effect of them might be to place their company in a more satisfactory position than it at present occupied. First, he desired to know of the gentlemen who had signed the circular whether they proposed carrying their intention of moving for the appointment of a committee of investigation into effect? (Yes, yes.) He wished them to point out in reply to an objection to that course raised by the board in the circular sent to the shareholders, to the effect that a committee had been appointed at the last meeting, that on their own showing that committee had ceased to exist, their labours being at an end.

Mr. ASTON observed that the committee appointed last year was one of conference; it was now, however, proposed to appoint a committee of investigation.

Mr. WHITE had made the remark simply with this object in view—that if the shareholders desired to appoint a committee on the present occasion they were not in any way to be prejudiced by the fact of a committee having been appointed last year. Now, in reference to that committee he wished to ask what was the reason of the retirement of so many of its members?

Major-General McCREA, in attempting to speak, was interrupted with loud cries of "One

## Original Correspondence.

## CONDENSATION AND EXPANSION OF STEAM—ITS HISTORY AND PROGRESS.

Sir.—The labours of any individual that have benefited his countrymen and mankind at large have generally secured their author the attention of the wise and good. In no case can it be proved that the labours of individual men have conduced more to the welfare of England than in those few examples that the steam-engine presents, in those marked epochs of its history when its basis has been so marked a manner improved that the practical results immediately following never have, nor never can, leave any doubt as to who their authors were, when the misleading influence of interest and jealousy permits the facts and those practical results to come home to the unbiased judgment of mankind. Therefore I submit the following facts and results, as if such in bare outline are unworthy of notice nothing their author can do will procure consideration.

Mr. Woods in 1844, at that time member of the Institution of Civil Engineers, and next in authority under George Stephenson on the Liverpool and Manchester line, read the paper published by Wale before the members of the Institution. In which he states that then the best non-condensing engines were using 16 lb. of coal, the best condensing engine 8 lb. of coal, and the locomotives 8 lb. of coke per horse-power per hour; and he adds "The figures given above indicate the importance of keeping pace with the latest improvements of the day." Mr. Woods knew I was using steam of 100 lb. pressure expansively, condensing it by the atmosphere, and obtaining the vacuum, also retaining the steam-water, and that I had then reduced the 16 lb. of coal to 3 lb. per horse-power per hour.

He also knew that when in his locomotives 60 lb. was the highest pressure used, I was doing as stated above. Mr. Woods, therefore, points to all this, and seems to say keep your eye upon those improvements, and if possible keep pace with them. This railway led the way in pressure and economy. At this point I may be permitted to repeat the remarks of two persons, one an American and the other an Englishman, and both competent from the examination they had given to the subject, and their practical knowledge, to form an opinion. In both cases the words were "Craddock is before his age." May I remark that it is not the age that makes the man, but the man that makes the age. Practical demonstration, such as given below, is the seed from which progress is sure to result, in defiance of all human obstruction: such obstruction may kill the man, but such seed will in the end produce its proper fruit. I give numbers to these demonstrative results, for ready reference.

I.—In 1840 the condensation of steam was considered as quite an impossibility in an engineering point of view; but things are possible or impossible in proportion as we adopt proper means to attain a desired end. I soon found that by setting the condenser in motion I could increase its condensing power twelvefold, and as I shall show that by 1858 I had reduced the 8 lb. of coal in the condensing engine to 1 lb., and having by the atmosphere, as I shall show more in detail, placed it in our power to render all engines condensing engines, it follows that I have reduced the surface required in the condenser for given power as 192 to 1. Or, to put it in a more practical form, from (say) 1920 square feet per horse-power to 10 square feet.

II.—Hall applied his surface condenser in water with Watt's engine, and required 6000 gallons of cold water per horse-power per day of 10 hours. In 1842, with a 5-horse engine, and my condenser in the atmosphere, the fresh supply of water required per day was but 1 gallon.

III.—In 1843, still condensing by the atmosphere, and in this case a 25-horse engine, I reduced the coal from 16 lb. to 3 lb. per horse-power per hour, and still required only 1 gallon per horse-power per day of fresh supply of water. This engine was in constant work for seven years, confirming by such practice these facts.

IV.—This is a point of great moment, because it holds the same position in relation to the expansive engine that Watt attaches to the injection of cold water into the cylinder of Newcomen's engine. It is well known that Watt, as soon as he could satisfy his mind of the great loss thus caused, his separate condenser was conceived, which practically was the most important demonstration he brought out in his invention and practice. But for a moment just glance at the obvious cause in his case, and the concealed character of the cause of all the mystery that for so many years hung over the expansive engine, and which the Government experiments, to which allusion is hereafter made, as well as all the acute minds left undiscovered, until, in 1845, I pored over the subject until I discovered the cause. And then for years men would not believe that such cooling, trivial as they thought it, could cause such practical failure in the expansive engine. It was in vain I reminded them that on each stroke the loss was insignificant, but that it increased with each stroke; they could not see, because, as they would have it, that upon the point under notice the non-expansive engine was subject to the same cause; and some went so far as to say the use of expansion would be more likely to diminish the effect from this cause than to increase it. To determine if the expansive engine had any superior value, the English, French, and American Governments made experiments that cost threefold the money that in my hands established not only this point, but several other points of equal value. Their experiments determined there was no value in the expansive engine; mine have shown its value to the British empire to be of 30,000,000. per annum more value than the non-expansive engine was. By way of a short illustration, we suppose saturated steam entering the cylinder at 100 lb. pressure, and 32° temperature, and suppose the cylinder also at 32°, the steam to be cut off at 1/10th of the stroke, and in the impelling stroke to fill the cylinder, and end that stroke at 7 lb. pressure and 176° temperature. In this case we suppose no heat lost but what is carried by the steam to the condenser; in a word, the only source of cooling now under notice is due to the steam itself. The cylinder being as hot as the boiler steam, no condensation of it would take place at the first stroke. But mark what has taken place—why, that the steam has lowered in temperature to 176° at the end of the impelling stroke, this being 153° below the boiler temperature; and at the end of the exhaust stroke we find it 198° below the boiler temperature. But we will deal only with the impelling stroke, and that on dividing 153 by 2 we have (say) 76° of cold through this stroke. Another point to note in this stroke is the average density, as well as the average amount of cold, as the power of carrying off heat depends upon both these conditions, from which it will be seen that as in the exhaust stroke the steam is in a rarified condition, its power of absorbing heat is much under what is generally supposed, unless there be water present on the hot metal. It is only necessary here to say that whether on the impelling or the exhaust stroke, whatever heat the cold steam can abstract from the cylinder it is sure to carry to the condenser, and, therefore, must be supplied, or in the expansive engine failure will be the result. The common notion was, and is now to some extent, that it was and is supplied from the steam on entering before cut off. But what I say and know is that it heats the cylinder only by its condensation, and that only momentarily, as no sooner is the communication with the boiler closed than, by the steam expanding, the conditions are produced which cause such water again to take from the metal of the cylinder the same quantity of heat which it had but momentarily imparted to it. Therefore the metal of the cylinder only holds that heat in the passive state, when it is required in the active state, in union with the water, to form steam to impel the piston from the commencement of its stroke to the end, instead of being in the passive state until near the end of the stroke, when its use is of little value, and the condenser is its certain destination. Suppose, now, for each stroke 1 grain by weight of the steam from the boiler to be required to make good the loss of heat absorbed by the cold steam, what follows? Why, that for the first stroke one is required, the second stroke would require 2 grains, and the tenth stroke 10 grains, and so on. In this way the expansive engine becomes much the same as if we suppose 10 grains by weight of steam would fill the cylinder to work at full pressure, and we let 1 grain in at the proper time to impel the piston, but keep back the other 9 grains until near the end of the stroke, and then let it in. Is it wonderful with

such cause in action as it was in the expansive engine, that the condenser was choked with steam, and that such engines were heat-wasters instead of heat savers? Until 1845 I had used the double-cylinder engine, and as I condensed by the atmosphere I could at any moment weigh the steam water. In this way I found that to keep the tubes of my boiler just so full of water, as the least steam would produce the most power, it required a considerable portion of the tubes to be exposed to the action of the fire above the water level. In this way I superheated my steam from 1843, and until 1858, and no better plan has been presented to this day, if such boilers were used, and no other boiler so good, or so safe, is yet produced. Engineers said the tubes would burn away above the water level. I used the boilers for 17 years, and found no such result. After 1845 I carried the superheating even further than practice indicated that it was required; and in 1852 added also a complete steam-case. Here is the cause discovered, and its evil tendency neutralised, and a practical experience of 17 years, derived from the every day use of such means, demonstrated their soundness, as the results attest their value. It was with a single-cylinder engine that I was driven to pore over the effects which led me to the cause in 1845; but in practice I prefer the double-cylinder engine, and from such engines were the results obtained that are given in this letter.

V.—In 1846 a 20-horse engine and its condenser still in the air were erected in a room of moderate size, and demonstrated the practicability of rendering the heat used for power afterwards valuable for heating, drying, and ventilating purposes. The air of the room at starting being 60°, it being summer time it rose to 120° as the highest. The breeze produced by the motion of the condenser imparted the same feelings as those of a breeze in the open air on a very hot day.

VI.—In 1848 the first engine sold to the public, and it was only a 4-horse power engine, though for years it did 10-horse work, was tested against the then portable engine, and threshed as much wheat with 1 lb. of coal as the portable with 17 lb. of coal. This engine was then condensing by the atmosphere. In this experiment the wheat was out of the same stack and the coal out of the same heap.

VII.—In 1849 an experiment was made with one of my engines and my condenser in water. The engine worked up to 20-horse power. The water it was found to require for condensation per horse-power per hour was 80 gallons, whereas Hall's condenser, applied to Watt's engine for the same purpose, required 600 gallons per horse-power per hour. Further, my condenser required but 3 square feet of surface in the condenser per horse-power, but Hall's required 20 square feet of surface in the condenser per horse-power.

VIII.—In 1854 I supplied a 30-horse engine to a saw-mill at Rame-lagh-road, Pimlico. It was the rule in the office with the previous engine, to book the work it did against the coal it used. The same was done after with my engine, the result being that the same amount of work that required 16 lb. of coal with the former engine was done by 1 lb. of coal by my engine. At that time the owner of the mill was giving 17. per week to remove the sawdust and shavings from his mill. He asked me whether such could not be burnt. My reply was "Yes; and save all the coal, but it would require a boiler with large fire-door and large grate." I made such a boiler, and it saved all the coal and the 52. a-year also, so that this man, instead of paying for 16 tons of coal a-week to drive his mill got the same power for nothing, and at the same time saved 52. a-year.

IX.—In 1855 Prof. Rankine made experiments upon a 226-horse engine identical in all points except size and power to that referred to above as No. 8, the substance of which is that the boiler generated 13:56 lb. of steam for each pound of coal burnt, and that the engine so used such steam as to produce the horse-power with 1:018 lb. per horse-power per hour.

X.—In 1848 I first brought this invention under the notice of the Admiralty. In 1849 Mr. John Seward read before the Institution of Civil Engineers a paper he had prepared at the request of Government. In this paper he says one great objection to expansive engines arises from the great enlargement of steam cylinders for a given power.

On Nov. 23, 1858, Prof. Rankine confirms the foregoing statements by the following:

CIRCUMSTANCES OF THE EXPERIMENT.—At 10:25 A.M. the steamer (*Thetis*) started from the quay at Greenwich, with the pressure in the boiler at 80 lbs. per square inch above the atmosphere, and soon attained her full speed. The pressure continued steadily to rise, and at 11:20 had reached 101 lbs. per square inch. At 11:30 the pressure being about 115 lbs. per square inch, the condition of the fires was carefully observed, the stoke-hole cleared of coal, the coal bunkers closed, and 448 lbs. of coal, which had previously been carefully weighed on dock, were sent down in sacks for the supply of the fires during the experiment on the consumption of fuel, which was held to commence at 11:30. During that experiment, and for a considerable time after its termination, the pressure (excepting during an interval, when the dampers were closed, to be afterwards specified) never fell below 112 lbs., nor rose above 125 lbs. on the square inch, and in general remained steady at 112 lbs. At 12:30 the dampers that regulated the admission of air to the fires were shut, the engines stopped, and the experiment was held to have closed, exactly one hour after its commencement; but, as the fires were lower than they had been at 11:30, they were again fed at 11:42 (the dampers being then opened, and the engine started), so as to bring them into as high a condition as they were at 11:30, and the coal so used was included in the consumption of the coal burnt during the experiment on the combustion. The coal remaining on the floor of the stoke hole was then sent on deck, and weighed, and found to amount to 218 lbs., so that 230 lbs. had been used during the experiment of one hour in length. During, and for a considerable time before and after, the experiment the speed of the engine never fell below 40 nor rose above 53 revolutions per minute. A leakage of steam took place from the stuffing box of the slide-valve rod, but for this was impossible to make any allowance. The steadiness both of the pressure and the speed for a considerable time before and after the experiment showed that the performance during the experiment was no extraordinary effort, but a fair trial.

POWER OF THE ENGINE.—The horse power of the engine, as indicated by a series of diagrams taken during the experiment, varied from 221 to 231, the mean being 226.

CONSUMPTION OF COAL.—The coal burned in one hour, ascertained as already described, with every precaution to make the fires as high at the end as at the beginning of the experiment was 230 lbs., being at the rate of 1:018 lb. per indicated horse-power per hour.

CONDENSATION.—The surface condenser acted perfectly, maintaining a steady vacuum of 13 lbs. per square inch. It is the most satisfactory example of surface condensation that I have seen.

(Signed) W. J. MACQUORN RANKINE.

59, St. Vincent-street, Glasgow, Nov. 23, 1858.

COMPARATIVE TABLE, with 130 lbs. absolute pressure in my boiler, and the Seward or 25 lbs. absolute pressure in the common boiler.

	Common	My	practice.	practice.
Cubic feet of space occupied by steam cylinder for 500-h.p. ....	Same	Same	Same	Same
Cooling surface of steam cylinders of 500-h.p., in square feet ...	6624	1663		
Cubic feet of space occupied by boilers of 500-h.p. ....	10	45		
Relative heat absorbing surface of boilers, to coal burnt, ditto. ....	2	5		
Relative grate surface to coal burnt, ditto. ....	Tons	76		
Weight of 500-horse engine .....	75	36		
Weight of boiler ditto. ....	48	6		
Weight of water in the boiler ditto. ....	525	75		
Coals for fourteen days' steaming, ditto. ....				

Professor Rankine says ("Steam-Engine and other Prime Movers," page 461):—"The construction which ensures the greatest heating surface relative to the fuel consumed is that in which the boiler consists mainly of a sort of cage of vertical water-tubes enclosing the furnace, as in Mr. Craddock's boiler, where there are from 6 square feet to 10 square feet of heating surface for each pound of coal burnt per hour; and the efficiency is accordingly greater than that of any other boiler which has yet been brought into continuous practical operation on the large scale." At page 297 is found the experiment of the author by which this boiler was found to make 13:56 lb. of steam for each 1 lb. of coal burnt in the furnace.

In the *Engineer* of Nov. 5, 1858, p. 358, in a leader, it is stated that every ton of coal saved on a voyage between England and Australia was then equal to a gain of 9%, the cost of coal being then 3d. per ton, and the freight 6d. per ton. Suppose, therefore, engines of the power of the Hercules (8000-horse power), which is 16 times 500, then, from the above table, we have near enough for our present purpose a saving on freight of coal and machinery of 9008 tons, which at 6d. per ton amounts to 75,448., and in coal saved 7200 tons, which at 3d. per ton gives 21,600. on each voyage of 56 days. Suppose five such voyages in the year, and the saving upon one such ship amounts to 485,048. This shows the reader that the conversion of unprofitable freight into profitable is, therefore, of far more value than the saving of coal in navigation.

On turning to the *Engineer* of June 11 and 18, 1858, pages 445 and 463, are two leaders on the long discussion upon high and low pressure steam, to which I contributed 24 long letters. In those leaders is found the following:

Mr. Craddock (Jan. 15) ascribes the observed fact of the condensation of the steam within the cylinder, and its re-evaporation, to the cooling and heating of the metal of the cylinder; indeed, he appears to have arrived at this conclusion on the subject,

as early as 1845. As the self-destructive process now described constitutes really the cardinal defect of most of the attempts to economise by expansive working, it is desirable to throw as much light as possible upon the subject (page 453). But the prime condition for economically working steam by expansion is to be found in the means for preventing condensation within the cylinder by contact of the metal surfaces by supplying heat to prevent the condensing process, as when there is no condensation there is no subsequent re-evaporation, Mr. Craddock (Feb. 19) (*i.e.* page 71). Of this we are persuaded, that there is more in steam and the steam-engine than is dreamt of by most engineers, and that for most of us it would be better to be less dogmatical and self-seeking, and more open to the instruction of those who, as natural philosophers undertake, and successfully, too, the investigation of first principles. Practical men—that is, the men who apply mechanics in practice—are by the nature of their vocations and by their habit of mind generally but imperfectly qualified to investigate, and it becomes them neither to despise, nor treat with indifference or neglect the necessary and invaluable labours of their scientific coadjutors. That the steam-engine is open to improvement, and that it may be very much improved, too, is unquestionable, but we must have a little more science infused into the current of progress as a flux to reduce to order and consistency the heterogeneous mass of practice, and to distinguish the true from the false. We congratulate our readers and correspondents on the benefit that has accrued to the profession from the free discussion of the question of steam-power in our pages, and we confidently anticipate an advance in the practice of engine-builders. Engineers must attend to what lies next them to be done; they have to probe the action of the steam within the cylinder to satisfy themselves of the injurious precipitation and re-evaporation of the steam neutralising the efficiency of expansion, to apply and mature the means of preventing such condensation of the steam, by the application of additional heat to the steam externally through the cylinder, or internally by superheating it, and to ensure an economically good vacuum in the condenser. They must further see what is to be done in expansive gear, to test the imperfections of the link motion, if such there be, and to compare the advantages of independent expansion valves, also to equilibrate the steam-valves, so as to unload them of the injurious pressure of the steam, and relieve them of such injurious pressure to avoid excessive friction.

THOMAS CRADDOCK.

[To be continued in next week's *Mining Journal*.]

## FOREIGN MINES.

MENZENBERG.—R. K. Roskilly, May 9: Dickin's Engine-Shaft: We have set this shaft to sink below the 54 by nine men, at 100 fathoms per fathom; the lode is 4 ft. wide, containing some fine grey copper ore, and it has a very promising appearance, but which at present is a little harder than usual; however, judging therefrom, we are led to believe that it will shortly improve. The sinking of the shaft is being pushed on with vigour.

ALAMILLOS.—In the 60, driving west of San Rafael's shaft, a large vug or fissure has disarranged the lode. The 50, west of San Francisco, is very strong lode, consisting of quartz, carbonate of lime, and good stones of ore—value ½ ton per fathom. The 49 cross-cut, north of Magdalena shaft, is very hard for driving. In the 85, east of Taylor's engine-shaft, the lode is still large and strong, with good stones of ore. The 50, east of Addis's cross-cut, north of Magdalena shaft, is regular and well defined, but continues quite unproductive. There is no improvement in the 50, east of San Victor shaft. The 50, west of San Victor shaft, is being driven south to meet the cross cut north from San Carlos shaft. In the 50 cross-cut, north from San Carlos shaft, the granite is very hard for driving. The 30, west of San Carlos shaft, is suspended for the present. In the 30, east of air shaft, the lode has very much improved, and is now opening splendid ore ground, worth 3 tons per fathom. The 40, east of air shaft, is being driven north on the cross course, and we are daily expecting to reach the point of the lode. The lode in the 20, west of Addis's cross-cut, is small and disarranged. In the 50, east of Crosby's shaft, the lode continues regular, but does not contain any lead. The lode in the 50, east of Judy's shaft, has still further declined in value in the past fortnight, now worth ½ ton per fathom. The ground in the 60, east of Judy's shaft, is hard and expensive for driving. In the 50, west of Crosby's cross-cut, the lode is very much improved, and is now worth ½ ton per fathom. The lode in the 30, east of Crosby's shaft, is again improving, now worth ½ ton per fathom. In the 30, west of Swaffield's shaft, the lode is small, with good stones of ore, worth ½ ton per fathom. In the 20, west of same shaft, the ground is very hard, and the lode small and poor. At Judy's engine-shaft, sinking below the 60, the men were occupied in cutting a plat or ledge for the stuff in the past month. The lode in Melchor's winze, sinking below the 25, has fallen off in value in the past few days, worth 1 ton per fathom. In Rafael's winze, below the 75, the lode is large and strong, with good stones of ore. The usual average rate of raising was maintained during the past month, and the stopes have not undergone any change worthy of notice. The ordinary surface works are going on very regularly, and the machinery throughout the mine is in good working order. We estimate the returns for May (five weeks) at 250 tons.

FORTUNA.—Canada Incosa: The lode in the 110, driving west of Crosby's shaft, is small and unproductive. In the 100, west of Judi's shaft, the lode continues unproductive. In the 80 east nothing further has been discovered in Henry's cross cut, which is being continued in a southerly direction. The lode in the 80, west of Kennedy's shaft, is regular and well defined, with a good stone of ore in the back of the end. In the 90, west of Lowndes' shaft, the ground is hard for driving, and the lode small and unproductive. The lode in the 90, east of Lowndes' shaft, is open and easy for driving, and will doubtless improve shortly when it approaches Manuel's winze. In the 80, east of Caro's shaft, the driving is resumed; the men are opening the north side to prove the lode in that direction. In the 50, east of San Pedro's, the water being drawn out the driving is resumed; the lode is strong and regular, with good stones of ore, worth ½ ton per fathom. Belmonte's winze below the 70 is holed to the 80; the lode is of no value. In Manuel's winze, below the 80, the lode is much improved, worth 3 tons per fathom, and moderately easy for sinking.



**Nos. 2 and 3 crossings** are worth 15' per fathom.—**Goole Pellas**: We are glad to say that the lode in the new flat rod shaft is improved in size and value, now 2½ ft. wide, and worth 15' per fathom. The 10', driving east of this shaft, is showing a strong and masterly lode, 5 ft. wide, and worth 9' per fathom. The 16' west is looking better than when last reported on, lode 15 in. wide, worth 9' per fathom; every foot we have opened out in this level is taken up by tributaries, and we can see the pitches as fast as we can open out the ground. In this part of the mine our prospects are exceedingly good.

**SOUTH CONDURROW**.—**S. Vivian and Son, H. Abraham**, May 13: In the 93 cross-cut south the rock is favourable for progress, so that we calculate on letting the stope on Saturday next at about 7' per fathom. In the 82, west of King's shaft, the lode is 5 ft. wide, and worth about 20' per fathom. In the 71, west of King's shaft, lode 5 ft. wide, worth about 15' per fathom. In the No. 3 winze, sinking under the last named level, the lode is 5 ft. wide, and worth about 25' per fathom. In the rise over the 71, east of King's shaft, the part of the lode being carried is 5 ft. wide, and worth about 10' per fathom. In the 61, east of King's shaft, the lode is 5 ft. wide, and worth about 10' per fathom. In the 40, west of Vivian's shaft, the lode is 5 ft. wide, saving work for copper ores.—**Pink Lode**: The lode in the 50, driving east of the Counter, is worth 10' per fathom. The lode in the winze sinking in the 40, west of the Counter, is worth 10' per fathom. We have put a piece of stull in the deep adit level at Cobblers' shaft, and have commenced putting out the water to-day below the adit level.

**WEST GREAT WORK**.—**J. Reed**, May 14: We have taken down the lode in the 25, east of the flat rod shaft, to day; the lode is 4 ft. wide, and I am glad to add we have not seen a finer looking lode in the drivage (26 fathoms), and this is worth 17' per fathom. We look upon this as a desirable improvement, going, as it is, into new or unexplored ground. The other points of operation do not present any features of much interest.

**SOUTH PHENIX**.—**James Kelly**, May 12: Pearson's shaft sinking below the 30 is down about 31 ft., the ground remains of a very good description for the production of minerals. The men are working with good spirit, and making very satisfactory progress. We are making every effort to get this shaft down to the 40 as quickly as possible. There is no change in the 30, west of shaft, where we have a man and boy working in Grace Dieu lode. At surface we have a man and three boys attending to stamping the tinstuff, and dressing up the slimes, and hope when we have cleared up all the tinstuff at surface to have 1½ ton of tin. All the machinery is working exceedingly well.

**SOUTH ROSKEAR**.—**J. Brenton, John Hosking**, May 9: At Gregory's engine-shaft we find the plunger was formerly fixed in the 115, the cistern and bearers found there are preserved by the mineralised water, and quite equal to new; our pitwork, however, being much heavier than was fixed here before we have put in additional timber, we shall at once commence to fix the plunger-lift. We sent down the H-piece to day, and we hope to complete the fixing of this lift and put down the 115 piece to day. In the 115 we find arches of copper in two pieces of main-rod in the coming week. In the 115 we find arches of copper in one, and a larger lode than in the level above, with a better appearance for the production of tin. The 80, east of Gregory's shaft, is being driven to hole to the eastern workings about 9 ft. per week, and the water continues to flow from the water gradually. The stope in this level are improving for copper. In the 60, east of King's shaft, there are three stope working by 12 men, where the tinstuff has in virgin's quality. In consequence of the inability of the granite carriers to bring cover for the flues the calciner is not yet working; we, hope, however, to be burning in a few days.

**SOUTH TOLCARNE**.—**J. Vivian and Son, J. Paull**, May 13: In the 20 fm. level cross-cut north the rock has become easier for driving through, and is impregnated with blende, copper, and munde. We calculate that we have about 9 ft. more to drive to intersect Vivian's lode. In the deep adit cross-cut south, on the cross course, the rock is not so favourable for progress as it has been. Judging from the direction of Hickey's lode, it would appear that we have now about 2 fms. to drive to intersect it. The engine keeps the drainage good by working at the rate of two strokes per minute, and is consuming a little more than ½ ton of coals in 24 hours.

**SOUTH WARD**.—**R. Goldsworthy**, May 11: The lode that we have intersected in the 60 fm. level cross-cut is not yet cut through, but as far as can be seen is a very strong well defined lode, producing munde, blende, and letting out water freely; the lode has a very gentle underlie west about 1 ft. in 6 ft., and no doubt will have a different appearance when we come to drive north and sooth, and get off the influence of the cross course. I will write you again if their be any further change before Saturday.

**SOUTH WHEAL FRANCES**.—**A. T. James, J. James, J. Opie**, May 9: We beg to hand you the following setting report of the mine.—Paseoe's shaft is sunk about 5 fathoms below the 165, but in consequence of a heavy scale of ground becoming too dangerous to work under, the shaftmen have been engaged in timbering and securing the same at this level, and at about 5 fathoms above for near a fortnight, consequently the sinking has been delayed. We are, however, pleased to say that the shaft is now in a thorough state of repair, and in two or three days a new lift of pump will be fixed and in full operation, when the sumpmen will resume their ordinary work at the bottom of the shaft, and complete their contract as quickly as possible. The 165 is being driven by three men and three boys, at 4' 5" per fm.; the ground is still favourable for progress. The 154 winze is suspended until this end is driven under it, which will, no doubt, drain it, and enable us to sink it much faster and cheaper. The 134 cross-cut is to be three men and three boys, at 4' 5" per fm.; the ground is 4 ft. wide, and worth 15' per fathom. A rise in the back of this level, to six men, at 10' per fathom; the lode is worth 20' per fathom; here every effort will be made to get this rise through to the 114 as quickly as possible for ventilation, and laying open the ground for stoping. The 124 stope, west of Paseoe's shaft, to two men, at 4' 6" per fm.; the lode is, probably, worth 5' per fathom. The 114 cross-cut, to six men, at 12' per fathom; here we are daily expecting to cut the new tin lode, and, judging from the stope above, when intersected it will be found good. The 104 stope, to twelve men, at 6' per fm.; the lode is 6' wide, and worth 15' per fathom. The 104 stope, west of shaft, to two men, at 9' 6" per fm.; the lode is 2 ft. wide, and worth 6' per fathom. The 104 stope, west of winze, to two men, at 30' per fathom; the lode is 2 ft. wide, and worth 4' per fathom. Every effort is being made to ventilate the 124 on the new tin lode, and lay open new sections of the ground for stoping, which, when accomplished, will place the mine in a much better position.

**ST. AGNES CONSOLS**.—**W. V. Vian**, May 14: Good progress is being made in sinking the engine-shaft below the 60. The 60 cross-cut driving north of the engine-shaft is letting out more water. We are hoping this change indicates our near approach to the lode. The stope in the back of the 48 continue to produce some good tin-stone.

**ST. JUST AMALGAMATED**.—**R. Pryor, Wm. Bawden, T. Richards**, May 12: The lode in the 110 fm. level end is fully 9 feet wide, and presents a fine appearance for the production of tin. We have no alteration to report in our tribute pitches, which are looking quite as well as for some time past, and the number is being daily increased. Good progress is being made towards having a good sampling next time, and our machinery is working well.

**TAMAR CONSOLS**.—**G. Rowe**, May 13: Our men are now engaged in cross-cutting south through the lode, for the twofold purposes of coming more perpendicular beneath the eastern part of the old workings and also to discover the footwall of the south part of the lode, calculated to be many feet wide at this point.

**TANKERVILLE**.—**A. Waters**, May 14: Watson's shaft is now 10 fms. deep, and will be gratified to hear that the lode at no point between the 120 and 150 looked so promising as now. There is a course of spar and lead 4 ft. wide, and worth 7 tons per fathom along the north side, and 6 to 8 ft. of spar, slate, and string of lead on the south side of the shaft, which together make a wide lode, and indicate, we think, the top of another grand run of ore. We shall continue the sinking of the shaft, and not drive out, probably, until we reach the 155. The lode in the 130, west of shaft, is worth 6 tons per fathom, and shows a fine appearance, there being a splendid cavity in the centre of it. The 130, east of cross-cut, is worth 4 tons per fathom. The 120 cross-cut south has gone into spar and ore, 4 ft. wide, but is not yet through the lode. The new lode is still south of the one now in the cross-cut, so that there are good prospects before us here. The 120 cross-cut north has passed through Robert's lode, and is now into spar and a strong feed of water, but whether this will turn out to be the old lode it is premature to say. The 110 cross-cut south is into a change of ground, and there is a sign of lodes-tuff, but not enough to offer an opinion on. The 100 cross-cut is not yet south to any lode. The 92 cross-cut south is through one branch, and on the eve of reaching the next division of lode, which is the part we are looking for, strings of spar and lead, with a good feed of water, are now visible. The stope throughout the mine are as reported to be last week. Our returns for this last week will be about 30 tons of rich lead ore. I never saw finer rocks of solid ore than those sent up from the bottom of the shaft to day, and such stuff will tell on our sampling greatly.

**TYLLOWYD**.—**J. Paull**, May 14: On Saturday last, being our setting day, the following bargains were re let:—The cross-cut to drive south of engine-shaft, by six men, at 150s. per fathom. This cross-cut is now extended a little over 5 fms. We have just cut the north wall of the lode, and as far as seen it looks very encouraging, containing spar, clay-slate, carbonate of lime, and lead ore; as we have only now cut into it we cannot say what size or value it is, as at the level above this point the lode is 10 ft. wide. However, I am happy to say, from present appearance, I think by driving a few feet further we shall be in the main part of the lode, which is still before us, when I hope to be able to say we are in a good bunch of silver-lead ore. The level driving south-west in deep adit is being pushed on with all possible dispatch, by four men; lode 3 ft. wide, carrying a good mixture of lead ore, and likely to improve; set at 130s. per fathom. We have been ready for some time for the machine, and expect a portion of same on the mine to-day, which will be put up as soon as it is delivered. Our wheel, &c., is working well, and going on regularly.

**VAN CONSOLS**.—**J. Roach, W. J. White**, May 14: Good progress is being made in sinking the main shaft, which is now 7 fms. 4 ft. 6 in. under the 15. The winze sinking under the 15, east of shaft, is still looking well, never better since we commenced to sink it, worth 10 tons of lead per fathom, with every appearance of further improving. The lode in the new sink, under the 15, is still holding good, worth 6 tons of lead per fathom. The remark made last week applies to the forecast in the 15 this week, no lode being taken down. The new stope in the roof of the 15 continues to yield its usual quantity of lead—4 tons per fathom. The other stopes are without change, producing 1 and 2 tons of lead per fathom respectively. The dressing of the 100-ton parcel is being carried on with all vigour. We are cross-cutting the lode in the adit level some 20 fathoms in advance of the 15; here we have very fine stones of lead. The north wall of the lode is not yet reached.

**VAUGHAN**.—**M. Maye**, May 12: Engine Shaft: In the 32 east the lode is 5 ft. wide, principally composed of a light clay-slate carbonatite of lime, containing spots of lead and blende occasionally, but not of any value. In the 32 west the part of the lode being carried is 1½ yard wide, much of the same character as when last reported on, yielding small branches of lead ore, saving work for dressing. In the deep adit level east the lode is large, chiefly composed of a blue-grey slate and carbonate of lime. Good progress is being made in driving. The pumping-wheel and pit-work are in good order but with the present dry weather are at times rather short of a good supply of water for pumping and drawing.

**WEST WHEAL GORLAND**.—**J. Mayne**, May 5: The sinking in the shaft at Messer's is progressing favourably, also the driving of the cross-cut north to cut the lode. We have forked the water 9½ fathoms below the 30, and are making preparations to break tinstuff from the lode in the western end.

**WEST ESGAIR LLE**.—May 14: There is no alteration to report throughout the different points of operation in both mines. At the eastern mine the men are engaged sinking the shaft below the 24, and are making fair progress. The wall of the lode is of a beautiful nature, and indicative of a continuation in depth of the ore-ground met with in the 21. At the western mine the stope are without change, and looking as well as at any previous time. The late dry weather has rather impeded dressing, water being scarce, but the rains of the past two days are now filling the reservoir again, and restoring activity to the works. The carriers are engaged carting 50 tons of ore to port, and a similar quantity will be ready shortly.

**CORNISH MINE SHARE MARKET**.—Although there has been a steady business transacted in the Share Market during the week, yet it has not been marked with such excitement as the previous week. The principal attention has been devoted to Dolcoath, Carn Brea, Tincroft, West Frances, West Bassett, Cook's Kitchens, West Seton, and South Crofty. The tin standards were on Thursday last put up 4s. per cwt., and many are expecting a further rise. It is stated, and seems pretty probable, that the Australians cannot send home tin and sell it for much less than 70' per ton. If this is the case, with economy and a fair rate for materials and labour, Cornwall can compete with Australia, and no doubt with such standard many Cornish mines would do very well. The following are the c

prices:—Carn Brea not much dealt in at about 54 to 58. Cargoll called 1½ to 2. Cook's Kitchens, 9½ to 10½. There has been a good business done in Dolcoath at about 48 to 49; shares are very scarce; their repressive "Bears" have been at a tenacity which sets at defiance all efforts to reclaim. East Pool 10 to 11. East Lovells remain firm, at 12 to 13. Providence, 1½ to 2. Rosewall Hills, 5s. to 10s., rather quiet. South-Carn Brea, 3 to 3½; a little business has been done. South Conderrow, 3½ to 4. South Crofty have been rather more dealt in, at about 19 to 21. South Frances, 12 to 13, rather quiet. South Roskear, 5 to 6. St. Ives Consols have been more enquired for at 5 to 9. A fair business has been done in Tincroft shares at 31½ to 32½. Trumpet Consols, 1 to 2. A large number of West Bassett shares have changed hands at prices fluctuating between 10½ to 12'; they leave off about 10½ to 11½. West Chiverton, 2½ to 3½. West Frances shares have been heavily dealt in at 13½ to 15, and close 14 to 14½ firm. West Seton shares have fluctuated between 45, 50, and 55, and leave off at the former quotation; the recent improvement still holds good, and is valued at about 40' per fathom. West Basset rather flatter, and declined to 43, 45. Wheal Basset, 30 to 35'. Wheal Kitty (St. Agnes), 8 to 8½. Wheal Peevor, 3½ to 4. Wheal Uny, 2½ to 3½. Botallack shares, which a few weeks since were "given away," or nearly so, for 6 and 7, are now called 40 to 50, and good buyers in the locality.—West Briton.

#### LEAD MINING IN CORNWALL.

Though tin and copper mines in the south-west cape of England are greatly depressed, consequent on high wages, dearness of coal, merchandise, and machinery, added to the exceptionally depressed prices of their products, still it is highly encouraging to the enterprising and persevering miner to find that in respect to lead mining the future is fraught with lively promise. It is true that the wonderful returns and dividends of East Wheal Rose have long ceased to exist, still it must be remembered that the collapse of that undertaking arose solely from a visitation of natural causes, and not sheer exhaustion. The workings were inundated through the bursting of a waterspout filling the valley in which the shafts were sunk, and thus at once destroying the mine and drowning over 100 workmen. We are pleased, however, to learn that it is again in contemplation to resuscitate this formerly extensive and valuable property.

Again, Wheal Trelawny and Mary Ann, with others in the immediate locality, have proved to be exceedingly acceptable prizes, and acquired at comparatively small outlays and with few hazards, while it is pleasing to record that one or two undertakings in this locality have recently been taken up, and exhibit strong promise of early success. It is to these inexpensive and encouraging concerns that we must look forward to, as the true refreshers in the path of the persevering and hopeful miner.

Herodfoot has proved itself a very valuable and permanent property for a series of years, and if properly handled and practically worked when first started the gains would have been twofold. Still, this must be regarded as a "gem" of more than ordinary character. In connection with this mine we may mention that the channel of ground northward, for about three miles in length, exhibits every indication of silver-lead existing in "bulk," highly argentiferous, easily detected in paying quantities, and wrought at comparatively trifling expenditure. We, therefore, regard with especial favour any attempt that may be made to develop the numerous lodes well known to traverse this extensive field of all but virgin ground, already recognised by practical authorities as possessing the true and essential elements necessary to form deposits of minerals in paying quantities. Hence, we congratulate Mr. Allen, of Liskeard, in acquiring and working the Bodmin Mine, now called the Wheal Allen Silver-Lead Mining Company (Limited), in or near the estate of Glyn, about five miles west of Liskeard, and (say) two miles north of Herodfoot. This property is at present in its infancy, and from the conformation of the ground adit levels from numerous points can be easily, and with little expense, extended to intersect the lodes, and thus prove the value of them before the permanent shafts are started.

Water-power exists all the year in abundance. Thus cost of fuel will be avoided in pumping, drawing, and crushing purposes, while timber in abundance is growing on the estate, and can be utilised at trifling expenditure. A level south has been extended on the eastern lode for about 120 fms., and for the last 50 fms. driving it has yielded rich lead, blende, and mundic, of a highly argentiferous character. At places the lode is 4 ft. wide, and averages about 2 ft. 6 in. to 3 ft. in width, having a flookan on the hanging-wall, which contains the minerals in question. No doubt in depth this vein will prove highly productive, and as the forebreast is good, and the depth increases as the drivage advances, the chances are good in extending the adit southward. To the west there is another lode opened upon for 6 fms. in depth and about 6 fms. in length, carrying two well-defined walls, and containing all the characteristics of yielding vast quantities of silver-lead ore as the end gains depth southward, and especially so in sinking deeper. This mine deserves vigorous prosecution. The outlay will be comparatively trifling; the chances are unusually good, while evidences of existing discoveries augur everything that can be desired in respect to the future. Large rocks of silver ores can be seen at the offices of Mr. Tredinnick, 32, Fleet-street, who recently inspected the property.

**WHEAL ARGUS**.—**T. Trahair**, May 13: There is an improvement in the tribute pitch at the 20, east of the Shop shaft, on the Elisha lode. The two pitches west of shaft are looking just as last reported. There is no change to report in the other parts of the mine. The stamps are working very well, but the water is very little.

**WHEAL COATES**.—**W. H. Martin**, May 14: The shaftmen continue to make good speed in sinking below the 20. In the north side of the shaft we have intersected a gossan branch, which yields good work for tin. We are saving it for the stamps. The lode in the winze is better defined, and producing good work. These points are looking favourable for the next level. The lode in the west end is producing fair quality tinstuff. The stope in the back of the 20 is not looking so well. The 20 west end is about 18 in. wide, and is yielding a little ore, but hardly enough to value; the ground is easier, and no doubt will soon make ore. The winze below the 20, and 7 fms. before the 20 end, is yielding 4 tons of ore per fathom. The rise in back of the 20 is yielding 5 tons of ore per fathom. In the 20 end west the lode is 6½ ft. wide, yielding 10 tons of ore per fathom. The 20 end west is about 18 in. wide, and is yielding 4 tons of ore per fathom. The lode in the north shaft, sinking below the 120, is 2½ ft. wide, and is worth 10' per fathom. The lode in the 120, east of north shaft, is 2½ ft. wide, and worth 10' per fathom. The stope above the 120, east of north shaft, are worth 10' and 14' per fathom respectively. The lode in the 100 east is 2 ft. wide, and worth 8' per fathom.

**WHEAL GRENVILLE**.—**E. Hosking, W. Bennetts**, May 9: The 50 driving south of boundary shaft has considerably improved this week, and is now worth 3 tons of lead ore per fathom; the lode goes on improving as we near the junction of the lodes, which is about 2 to 3 fms. beyond present end. The 45, south of old men's winze, is in a wide ore lode, and improving. We should now go on with deepening the shaft without delay, so that the 50 and 65 may be opened up and worked together.

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**WHEAL RUBY**.—**J. Richards**, May 13: The lode in the adit end driving west has become very large; I cannot now report the full size, as the lode is wider than the level, and part of it is standing against the north wall; as far as seen it is composed chiefly of quartz, with a little pyrite, but not yet valuable for tin, and is harder for breaking than I have seen it before for some time; however, changes are often taking place here, and I am expecting a change for better almost daily, as we are getting near the ground where we have every reason to expect it, and I am looking forward with confidence to a great success.

**WHEAL UNY**.—**W. Rich, M. Rogers, S. Coade, jun.**, May 9: We have begun to put in new skip-road in incline shaft; as soon as this is completed we shall urge on the bottom levels west. The men are making fair progress in the back of the 130, towards Hind's shaft. We have not yet drained this shaft below the 80, but hope the rise referred to will soon do it. There is nothing new to report on in the 30 fm. level cross-cut north. The 80, east of King's, is worth 6' per fathom. The 100 east is worth 8' per fathom. The 110 east is worth 10' per fathom. The 120 east yields stones of tin. The 130 east is worth 8' per fathom. The 140, east of Gooldie's, is worth 5' per fathom. The rise in the back of the 150 east yields a little tin. The 160, east of sump, is worth 12' per fathom. The 160 west is worth 8' per fathom. We have to day sold 11 tons 12 cwt. 0 qr. 1 lb. of tin.

**WHITEHAVEN IRON MINES**.—May 13: I have written for the past fortnight: I never saw the lode in No. 4 drift looking better than at present; we have cross-cut the lode, and find it to be 10 ft. wide, and will yield fully 45 tons of the best quality ore per fathom. We are having a rise put up from this drift to surface, for ventilation, and to prove the lode. As soon as this is completed we shall put six men in the drift



January of \$4672; July, \$5138; March, \$4581. St John Del Rey, 245 to 250; the profit here for March is 3940%; the returns of gold produced \$8211; the stock has risen more than cent. per cent. Eberhardt and Aurora, 3½ to 4; Emma, 2½ to 3. Flagstaff have advanced to 32, 3½; Birdseye Creek, 3½ to 3½; South Aurora, 13½ to 15½; Sweetland Creek, 4½ to 4½; Last Chance, 1½ to 2; Richmond, 6½ to 7½; Sierra Buttes, 1½ to 2½; Cape Copper, 28 to 30; New Quebrada, 7½ to 8; Panulicillo, 1½ to 1¾.

The market for Mine Shares on the Stock Exchange during the week has been steady, with a fair amount of business.

American descriptions remain without much variation, the exception being hydraulic mines, which are still in favour, and a good business note. Cable advices from Blue Tent and Cedar Creek, announcing the realisation of good profits, have stimulated enquiry in this department, and most of the shares leave off firm and in demand. The second run at Blue Tent (for a period of 25 days) has resulted in a profit of \$5000, making a total net profit for 65 days' working of \$13,700. St. John del Rey (stock), referred to below, has again further advanced.

The metal market has continued to rule in favour of buyers. Copper has been more enquired for, although the improvement of last week has not been entirely maintained. Tin dull, English being in small request at quotations; the Banca sale on May 29 will be 23,300 slabs. The lock-out at the tin-plate works continues, and quotations remain nominal. Lead firmer. Spelter in better demand.

St. John del Rey (stock), 245 to 255; it will be seen from the official report, which appears in another column, that the progress being made in opening out the new workings is all that can be desired. In a former number of the Journal (Nov. 15, 1873) we gave a brief history of the great work undertaken by the company of sinking two vertical shafts to the depth of some 190 fms, each to intersect the lode then inaccessible from the effects of the fire. The lode was struck in one of these shafts (A) on Oct. 7, and the work of opening on the lode from it was at once commenced. From the other shaft (B), which had been intentionally placed further from the access, has been had by a level, and which did not, consequently, reach the lode till Feb. 11. The opening on the lode from this shaft has necessarily been more tedious than from the A shaft, which was sunk on the lode. The rate at which the produce of gold has been monthly increased will, however, enable our readers to form a correct opinion as to the satisfactory progress of the work of opening out the mine as above referred to. The produce of gold for the month of November was 5256 oits.; for December, 9987 oits.; for January, 13,503 oits.; for February, 15,187 oits.; for March, 20,746 oits. The yield of the ore, too, has been found at this deeper level rather better than higher up in the former workings, which gave in this part of the mine, in 1867, rather less than 7 oits. of gold per ton; for whereas the yield for the months of February and March has been 8456 oits.—almost an ounce troy—per ton. The remittance of gold just received, being two months produce, has realised 14,911t. Don Pedro, 4 dis. to par; the produce for March was 5579 oits., of the value of 2371l., against a cost of 3057l., showing a loss of 686l.; for the same month of last year the loss was 1128l. Rossa Grande, ½ to ½; the produce for March was 1406 oits., of the value of 563l., against a cost of 1132l., showing a loss of 559l.; for the first division of April it is reported that the mineral extracted from the Bahia Mine was of better quality than that of the previous month. At Cachoeira fair progress continues to be made in draining, and at the date of last advices they were within 4 ft. of the 20 fm. level.

Richmond Consolidated, 7½ to 7½; a cable received, week's run \$17,000, shall start second furnace to-morrow. It is satisfactory to note an improvement of \$1000 in the returns; it is still more so to learn that the second furnace is about to be lit up, because as the machinery is calculated to serve three furnaces, a waste of power is going on while it is only doing duty for one. The fuel difficulty is still the most prominent for all the mines in the district. The severe second winter has thrown everything back for nearly two months, and as the charcoal makers could not begin work there was no stock on hand, and the highest bidders now get the first supplies. One effect of the late weather has necessarily thrown on mineowners in the district the burden of paying away large sums in dead work and staff expenses for two months longer than usual, and while making no returns, thus throwing a great strain on their working capital. If they are commonly wise they will strain every nerve to get the railway completed in time to guard against such contingencies in future. We learn that the new flue works in the most satisfactory manner; it must be gratifying to the shareholders that this method of preserving the locality from injury and preventing the escape of very valuable products hitherto wasted, has been started by an English company. It is to be hoped that the further improvements contemplated will have a still more satisfactory result, and thus afford the inhabitants further reasons for rejoicing in a success of which they are certain to participate. The *Eureka Daily Cupid*, of April 18, contains the following paragraph on the Richmond—"Work is still being vigorously prosecuted on the M'Gee shaft, with the object of opening the lode at an increased depth. The developments in the lower portions of the mine are all that could be desired, more high-grade galena being found than ever before. The assay value of 32,000 tons smelted last year averaged, after deducting 10 per cent. for moisture, \$70, and the actual bullion yield \$52 per ton, or about 74 per cent. of the assay value. This year it is expected that the product will be larger, more particularly as a higher percentage is very likely to be obtained in the smelting process. The mine is unique in some respects. For 600 ft. down from the outcrop it has had the form of an elongated chimney, or pipe, that varied in length from 120 to 150 ft., and in width from 30 to 60 ft. The 300 feet above the Lizette Tunnel yielded 41,000 tons of ore, and the directors estimate that the next 300 ft. will produce 60,000 tons, of which 16,000 tons were smelted last year. If these figures are correct there must be 40,000 tons in the lower works now, irrespective of the more recent discoveries. At \$52 per ton the money value of this reserve will be \$2,288,000. The great wealth of the Richmond property is so well established that the shareholders may expect at least \$500,000 for annual dividends for two years to come. We have not made a personal examination of the mine, but our information comes from sources which we regard as most reliable."

Emma, 2½ to 2½; at the meeting yesterday (Friday), the details of which appear in another column, a long discussion took place respecting the present condition of the company, and the Chairman stated that up to the date of the latest advices no discovery of any value has been made. The Chairman (Mr. George Anderson, M.P.) and Com.-General Gardiner have resigned their seats at the board, and Mr. W. H. Burnand was elected to fill one of the vacancies, but no suitable name was suggested to fill the other vacancy, and the meeting was, therefore, adjourned till June 9, when the election of directors will be proceeded with. Flagstaff, 3½ to 4; Last Chance, 2½ to 2½; Tecoma, 1½ to 1½; Utah, 1 to 1½; the last advices are dated April 16, at which date the weather still prevented dressing; the time, however, was being utilised in arranging for sales of ore on the spot. Shares have been enquired for during the week.

Blue Tent, 5 to 5½; the weekly report will be found in another column. A telegram received on Thursday announces the completion of another run on Enterprise claim, resulting in a profit of \$5000 for 25 days' working, making a total profit of \$13,700 in 65 days' working. Cedar Creek, 1½ to 2½; a telegram received this week from the agent, Col. Ludlum, announces the result of the clean-up for April, showing a profit of \$15,000. This is practically the first run of the season at this company's mines, and steady monthly profits will, no doubt, henceforth accrue during the remainder of the season, which promises to be unusually long. Sweetland Creek, 4½ to 4½; no particular news has been received from Mr. McLean during the week, everything progressing as usual. Birdseye Creek, 3½ to 3½; Mr. Powers is pushing on with the work as energetically as possible, washing going on about the same.

Holcombe Valley, 3 to 1; the latest advices is to the effect that the five-stamp mill has started up again with a good show on the amalgamating plates of a sati-factory clean-up. The new pump is in place, and has successfully drained the works to the 120 ft. level. The influx of new comers to the district has necessitated the laying out of a town which has been called "Holcombe City," between which place and San Bernadino (the town of general supply, 70 miles

distant), there has been a regular line of stages established. There have been a great many new mines located in the district, and miners are flocking in from all the surrounding country.

Mineral Hill advices state that for the week ending April 20 60 tons of ore were raised, of an average grade of \$41 per ton, at a cost of \$964. New Pacific, 3 to 2½; the agent is still prosecuting the work on the ledge recently cut, and has hopes of an improvement. A great deal of dead work is being done, but the least discovery would handsomely repay all the outlay made.

Port Phillip, 3 to 2½; during February 4834 tons of quartz were crushed and 27 tons of pyrites treated, which yielded 1083 oits. of gold, or an average of 4 dwts. 11½ grs. per ton. The receipts were 3324l., and the payments, including 1365l. on account of firewood and mine timber, 4071l., showing a loss of 346l., leaving an available balance of 858l.

During the corresponding month last year 454 tons and 10 tons respectively were crushed and treated, which yielded 828 oits. 2 dwts. of gold, or an average of 3 dwts. 15 grs. per ton, and there was a debit balance of 4344l. Telegraphic advices announce that for the month ending April 22 the yield of gold per ton was 4 dwts. Almada and Tiriti, 3 to 2½; the profit for January was \$4672, and for February \$518; from these amounts \$4460 and \$5000 have been respectively written off against machinery taken from the stores. The profit for March was \$1581; the advices add that the concentration of black ore had been stopped, that there was shortage of water, but that the prospects were good, Mina Grande improving, and its works progressing satisfactorily.

Cape Copper, 28 to 30; 550 tons of ore have been sold at an average of 15s. 0d. per unit, realising approximately 12,900l.; 615 tons have been put forward for sale on May 26; the advices from the mines are without special feature. Scottish Australian, 1½ to 1½; during February 7270 tons of coal were sold from the Lambton Colliery; the company's trade, which had been slack during the first two months of the year, was improving; the sales during the corresponding month of last year were 14,287 tons. Chontales, 3 to 2½; advices by last mail show that the mines continue to maintain their productive character, for notwithstanding that the Easter holidays caused a loss of ten days' working in crushing, the manager was able to show a profit of nearly 200%. The wet season is expected to commence about June or July, when 36 stamp-heads will be fully occupied and considerably larger profits realised from treating the same class of ore as at present; but it is expected that shortly two other lodes will be reached by cross-cuts now driving which when worked before gave much richer ore than the present average.

Van, 27½ to 30; there is no alteration at the mine, all the works are progressing as usual, and everything in good order. Van Consols, 4½ to 4½; shares steadily at 4½ to 4½; the lode in the winze is producing 10 tons of lead per fathom; new sink, 6 tons per fathom; stopes in back of the 15 fathom level, 4 tons per fathom; other stopes, 1 and 2 tons per fathom: Aggregate output 23 tons of lead per fathom. Bog, 2 to 1½; the 175 end west still maintains its value. The branch recently cut in the 115 cross-cut is improving in value. No other alteration. Pennerley, 1½ to 1½; no alteration reported from the mine. The agent expects to be able to increase the sampling this time. Port Nigal; the applications for shares will close on Thursday and Friday next, and they are quoted at 2½ to 1 prem.

Subjoined are the closing quotations:

Bog, 2½ to 1½; Carn Brea, 51 to 54; Dolcoath, 42 to 47½; East Van, 1 to 1½; East Lovell, 11½ to 12½; Great Laxey, 11½ to 12½; Pennerley, 1½ to 1½; Penkine Beach, 3½ to 5½; Tankerville, 9½ to 9½; Van, 27½ to 30; Van Consols, 4½ to 4½; West Chiverton, 2½ to 3; West Tankerville, 1½ to 1½; Almada and Tiriti, 3 to 2½; Birdseye Creek, 3½ to 3½; Cape Copper, 28 to 30; Chontales, 3 to 2½; Don Pedro, 4½ dis. to par; Eberhardt and Aurora, 3½ to 3½; Emma, 2 to 2½; Flagstaff, 3½ to 4; Last Chance, 2½ to 2½; Malpaso, 1½ to 2½; Malibar, 5½ to 5½; New Pacific, 3 to 4½; New Quebrada, 3½ to 3½; Rica, 1½ to 1½; Richmond Consolidated, 7½ to 7½; St. John del Rey, 245 to 255; Sweetland Creek, 4½ to 4½; Sierra Buttes, 1½ to 2½; Utah, 1 to 1½; United Mexican, 3½ to 3½; Cedar Creek, 1½ to 2½; Tecoma, 1½ to 1½; Colorado Terrible, 3½ to 4½; Independence, 2½ to 2½; Blue Tent, 5 to 5½.

COLLIERIES.—The fortnightly settlement interfered somewhat with fresh business, but on the whole a fair number of transactions have been recorded during the week. Cardiff and Swansea, Newport Abercarn, United Bituminous, and Welsh Freehold have been in demand, but New Sharstone and Silkstone Fall have been offered and close lower. These and the following have been the principal shares dealt in:—Nant-y-Glo and Blaina, Ebbw Vale, Fitzroy Bessemer, Iffon Rhyn, Hockley Hall, Marbella, Wedgwood Iron, Whitehaven Iron, Thorpe's Gawber Hall, Clee Hill, Palmer's Shipbuilding Iron Company are quoted nominally 17½ to 18½; the directors announce that they have found it desirable to appoint a resident local manager at the company's works on the Tyne, and have selected Mr. Thomas Small, who for the last fifteen years has acted as the captain superintendent of the large fleet of steamers built on the Clyde for the Cunard Company. The vendor continues the general manager, but will reside in London; it is to be hoped that the arrangement may exercise a beneficial effect on the shares. The directors regard the future prospects as improving, but feel the strong necessity of a coal property being purchased for the company. Bowling Iron Company, 7½ to 7½; Merry and Canningham, 3½ to 3½; Monkland, 4½ to 4½; Brynkinalt, 5½ to 5½; Clee Hill, 10s. to 15s. The West Mostyn Coal and Iron Company's shares are in request, at 1½ to 2 prem. There has been a large enquiry for Bilson and Crump Meadow shares; the profits up to the end of June will be divided in July next, and will, it is reported, exceed 14 per share. We understand there has been a good enquiry for freights to Bilbao, and that the leading iron mines are commencing to ship ore. Until Carlism, however, is fairly stamped out miners will be scarce, and operations, more or less, spasmodic and uncertain. Two London companies have had their plans sadly interfered with—the Bilbao and Somorrostro, both in 50% shares—the prospects of both when peace is guaranteed are excellent; Darlington Iron, 7½ to 8½, showing a rise of 10s.; the shares have been purchased on the distinct announcement that the Durham strike is at an end. By a majority of 175 against 39, it was decided at the meeting of the Council of Miners to accept the 10 per cent. reduction, and go to work immediately at the 11 days system, instead of the 10. The Welsh colliers, too, have yielded, accepting the 10 per cent. reduction proposed by Mr. Fothergill, M.P. New Sharstone, 6½, 5½ discount; Chillington Iron, 5½ to 6, with some enquiries from buyers. Thorpe's Gawber Hall are now quoted ex div., and close 15; the dividend was at the rate of 40 per cent. per annum. Cardiff and Swansea, 3½ to 3½; Newport Abercarn, 3½ to 3½. A circular from the Sheffield Albion Steel and Wire Company (Limited), informs the shareholders that they intend to borrow on debentures 30,000l., in 50% or 100%, at 7½ per cent., repayable in five years; the directors state that at least 20,000l. is necessary to carry on the business, and unless the entire amount is subscribed they will make no allotment. The directors of the Parkgate Iron Company (Limited), at their meeting, on Friday, will recommend the payment of a dividend of 15s. per share, free of income tax. Of this an interim dividend of 5s. per share was paid on Dec. 1, leaving 10s. per share to be now distributed. They have appropriated 5000l. to the reserve fund, making the total to the credit of that account 15,000l. The total balance of profit for the year is 39,902l., and, after appropriating the amount as they propose, the directors will have a balance of 3382l. to be carried to next account.

The Hon. Ashley G. J. Ponsonby and Mr. J. N. Sears, as trustees for the debenture-holders, are inviting subscriptions at par for 3000 CONVERTIBLE TEN PER CENT. FIRST MORTGAGE BONDS of 50l. each, redeemable by annual drawings at 10% premium on each debenture, forming a first charge on the property of the BOULDER VALLEY COLLIERIES COMPANY OF COLORADO, which has a share capital of 200,000l., and a property which has been very favourably reported upon by Professor Charles S. Richardson and others. Returns from the mine for October and November last show the actual profit made to be 81 (4s.) per ton, and the output on 1st reports about 400 tons daily. On this basis the profit is much more than is required to pay interest and provide the necessary amount for annual redemption and premium on debenture bonds. Option is given to the debenture-holders to exchange debentures for fully paid shares at any time within three years, so that they are enabled to participate in the expected future increase of income. That the future will prove these collieries to be increasingly valuable and productive, situated as they are in the centre of one of the richest portions of the United States, where population and industrial developments of every kind are making such unprecedented strides, is considered beyond all doubt. The official returns of Colorado show that between 1870 and 1873 the population nearly quadrupled, and the value of the property more than doubled in the same time.

Professor Richardson and Captain Mitchell report that the property consists of

the celebrated collieries and estates owned by the Colorado Coal Company and the Saint Louis and Denver Land and Mining Company, situate in Weld county, Colorado, U.S.A., together with all the dwelling-houses and other buildings, coal, cars, rails, and the entire mining plant, mules, and working equipments now upon the said properties, as described in the contract of sale. The extent of this splendid property is described by Captain Mitchell as "nearly equal to six square miles and a half," and by Professor Richardson as 4080 acres. There are about 30 acres of this in full working, with new workings continually going on. It is estimated that 50,000,000 tons of coal can be raised from one seam alone. The prospectus will be found in another column.

The CATERHAM JUNCTION LINE, WHITING, AND CEMENT WORKS COMPANY, with a capital of 20,000l., in shares of 5l. each, has been formed to purchase for 5000l. the lease and further develop the chalk quarries and lime works at Caterham Junction, near Croydon, which have the advantage of being in closer proximity to a railway than any other quarries near London. There is also direct communication with Redhill Junction, which affords every facility for the transmission of lime to the south, south western, and south eastern counties. The profit last year was 238l., but it is stated in the prospectus that by the employment of additional capital the works in their present condition would yield twelve times the quantity of lime, &c., increasing the profit to 1950% per annum, and it is added that the erection of additional kilns would increase considerably the production of lime, for which large contracts can, it is said, be immediately entered into, and that the profits on the works as at present in operation would be proportionately enlarged. In addition to the existing plant the directors propose to erect machinery for the manufacture of whiting and various kinds of cement, materials for which exist on the property, and which, the directors estimate, will yield a profit of 100 to 150 per cent. The clay used for Portland cement can be had at a small cost within four miles of the works. The prospectus will be found in another column.

The Société Civile de HOUILLES D'AUZIT are inviting subscriptions at 92frs. 50c. per 100frs. bond for 30,000 SEVEN-AND-A-HALF PER CENT. MORTGAGE BONDS, redeemable at 250frs. per bond in 90 years by periodical drawings. The concession is 489 hectares in extent, and is intersected by the Paris and Orleans Railway, a siding running directly into the colliery. The seams actually discovered are reported upon by four eminent mining engineers to be of a thickness of 27 metres (30 yards), representing more than 20,000,000 tons of coal, or enough for an output of 200,000 tons per annum for 100 years. The profits will be at least 5frs. (4s.) per ton, or 1,000,000frs. (40,000l.) per annum. There is evidence of this in the results obtained at all the neighbouring collieries—Aveyron, Aubin, Desceville, Cranze, Campagne. This mortgage bond capital will be applied for increasing the plant and buildings, sinking two new pits, improvement of the railway siding, and increasing the output. The coal is of good bituminous quality, and applicable to gas, metallurgical, industrial, and domestic purposes. The security is considered to be ample to guarantee the punctual payment of the interest and the redemption of the capital.

TIN-PLATES.—The provisional specification of MESSRS. MOREWOOD and ROGERS, of Llanelli, describes coating plates by immersion in a bath of metal and raising them out of this bath between rollers placed above the metal in the bath and supplied with coating metal by troughs, which also aid in enclosing a draining space between the surface of the metal in the bath and the nip of the rolls. Sometimes, in conjunction therewith, other similar rolls supplied with flux are employed.

FUEL.—MR. G. B. KNIGHT, of Luton, has patented the combination of chalk, carbonic acid gas, tar, saltpetre, swedish pitch, resin, and sawdust in the manufacture of a composition to be used either as a substitute for ordinary coal fuel or in aid of it. The proportions of the ingredients may, however, be varied.

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No. 243, SIXTEENTH STREET (Lock box 2225), DENVER, COLORADO.  
References

## COAL MINES REGULATION ACT, 1872.

EXAMINATIONS FOR MANAGERS' CERTIFICATES  
OF COMPETENCY.

DISTRICT UNDER THE CHARGE OF J. P. BAKER, Esq.,  
H.M. INSPECTOR OF MINES.

**NOTICE IS HEREBY GIVEN**, that an EXAMINATION for MANAGERS' CERTIFICATES OF COMPETENCY, under the above-named Act, will be HELD on the 1st day of June next, and CANDIDATES intending to present themselves at such EXAMINATION must, on or before the 25th day of May, notify such intention to the Secretary of the Board of the above-mentioned district, from whom all information as to particulars can be obtained.

By order of the Board,

WM. BLAKEMORE, Secretary,  
Heathfield Villa, Wolverhampton.

## Notices to Correspondents.

\* \* \* Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be filed on receipt; it then forms an accumulating useful work of reference.

**ABERDOVRY MINES.**—As I do not receive any reply to my enquiries from the liquidator of this company, I feel compelled to appeal to those who may know the real state of its affairs for information to which all shareholders are entitled.—  
AN OLD SUBSCRIBER.

SIR.—Would any reader kindly give the following information?—The City of London dues on each ton of seaborne coal brought into the port of London; and the dues per ton on coal brought otherwise—say, land carriage. Also, about the average freight per ton of seaborne coal from Hartlepool.—CONSTANT READER.

SIR.—I am informed that oil lamps are mostly used in lieu of candles underground in the mines of Scotland and on the Continent; could any of your readers inform me what kind of oil and description of lamp is best, and where they may be obtained? Such information would oblige.—ANTI-TALLOW CANDLE.

**STEAM HAMMERS.**—The Emperor of Russia has had working in his own factory at Oboskoff Steel Works, St. Petersburg, for some years a steam hammer nearly twice the size of the one erected at Woolwich. The steam cylinder of the Russian hammer is no less than 6 ft. 6 in. in diameter. This hammer was converted by Messrs. Thwaites and Carbutt, and sent out in 1869. It is a 50-ton hammer. Sir W. Armstrong has had in operation for twelve months a 30-ton steam hammer of their make for hammering the gun barrels, with which he is capable of forging guns up to 100 tons in weight, or even larger. The only other 50-ton hammer in the world is in the possession of Krupp, of Essen, constructed at his own works, and which has been in operation many years.

"Contango," as used in the City, is understood to mean the rate of interest paid for carrying a transaction forward from one settlement to another—that is to say, for an interval of delay in paying for stock purchased; while "backwardation" implies a rate paid by a seller to a buyer for being allowed, when stock is scarce, to delay the delivery of that which he has undertaken to supply.

**SHARE DEALING.**—We never interfere in the sale or purchase of shares; neither do we recommend any particular mine for investment or speculation, or broker through whom business should be transacted. The addresses of most of the latter appear in our advertising columns.

Received.—"M. W."—"C. S."—"A Shareholder" (Pennerley)—"E. R. R." (Sanderson)—"M. P."—"Justice" (Great North Carden).—"Another Reader"—"Euclid"—"J. T." (Woolbridge).—"Shardholder" (Tyllwyd), should write to the secretary.—"R. T."—"Amicus" (Eclipse)—"Miner" (Salop); Yes—"T. B."—"E. W. L."—"Caution"—"Shareholder" (Pensilva); Next week—"Antrim."

**AMERICAN SUBSCRIBERS.**—In reply to several enquiries, it may be stated that subscribers in the United States can be supplied with the *Mining Journal*, post free, at the price of \$3 50c. gold per annum, payable in advance, by remitting to Mr. D. Van Nostrand, publisher, and importer of scientific books, &c., Murray street, New York; or, direct to our Office, 26, Fleet-street, E.C.

THE MINING JOURNAL,  
Railway and Commercial Gazette.

LONDON, MAY 16, 1874.

## THE MINERS' WAGES QUESTION.

The long-expected turn of the tide in connection with the price of coal and colliers' wages has at length set in, evidently to the great discomfiture of many of the leaders, as well as of the entire of the rank and file, of the various Associations of Miners throughout the kingdom. All persons connected with our collieries freely admit that they have enjoyed a long season of prosperity, such as the most sanguine never could have anticipated, yet the men refuse to submit in any way to the great change which has taken place during the last few months in the state of the coal trade. Large profits as well as large wages combined, during the greater part of last year at least, to send up coal to an almost prohibitive cost, and, as we frequently pointed out would be the case, ultimately led to a great decrease in the consumption and a most marked decline in the price. This has been the case recently to such an extent that the trade is fast coming back to something like what it was in the early part of 1872, when wages as a rule were from 50 to 57½ per cent. less than they now are. It will be recollect that every increase made in the charge for coal was either preceded or immediately followed by an advance of wages, on the simple ground, as the men stated, that they were entitled to share in the prosperity of the trade and in the vast profits made by their employers. Admitting that such grounds for increase of wages are sound and tenable, it surely follows that when there is a great falling off in the demand for coal, with comparatively trifling profits, that wages should follow in the same direction. But this is what the miners are opposing most vigorously. They know that business is bad, and the production of coal in excess of the consumption, yet this state of things they have attempted to meet by expressing a desire to limit the output at the collieries. A proposal so intensely selfish, and so greatly opposed to the public interest, not having been acquiesced in by the employers, the men have resorted to "striking," believing that by so doing they would be able to prevent a reduction of their wages. In this they have failed, for despite the strikes in several districts the colliery owners in others have given notices of reductions, stating that in the event of the proposals not being accepted they were prepared to let their pits lie idle. This was the case more particularly with respect to Scotland, where some of the leaders are in favour of a general strike. But we are glad to find that Mr. MACDONALD, M.P., who has worked so energetically for more than a quarter of a century for the Scotch miners, is opposed to any such course. He said it could not be successful, and could only end in "the miners' families being starved into submission." He refused, under the circumstances, to leave London to advise with them, but leaves, as he says, "their present advisers to complete the work of ruin and confusion."

In South Durham the miners have also shown a disposition to oppose the acceptance of the 10 per cent. reduction agreed to by a majority of the delegates. But seeing that it was inevitable they then proposed to their employers that the pits should only work five days a week, which, we need scarcely say, was indignantly refused. The Cleveland ironstone miners, too, having risen in insubordination to the terms accepted by the executive, struck on Saturday last against a reduction of 12½ per cent. Of the 15 lodges which met at Saltburne-on-the-Sea on Saturday, only one agreed to accept the reduction of the council decided in favour of it. In the course of the discussion which took place, it appears that the executives expressed their regret that the lodges had not instructed their delegates to vote in favour of the reduction being accepted. It would thus appear that the executive of the miners instead of leading the men as they have hitherto done, have actually to follow them now in not a few instances. The dispute in the Forest of Dean has been arranged, as has that in Somersetshire, but at some of the collieries near Bristol notice of a reduction of 20 per cent. has been given, to commence in June. Despite the opposition, it may reasonably be assumed that the dispute in Leicestershire and Warwickshire will terminate by the masters' terms being accepted. At Burnley the men have given up the contest for a very good reason—the exhaustion of their funds, but as a set off, the Amalgamated Association of Miners, with Mr. HALLIDAY at its head, is fighting a heavy battle in Staffordshire, and at a cost of something like £6000/- a week. The North Wales, as well as members in other districts asked for the support of the Association in striking against reductions, but Mr. HALLIDAY assured them the executive had as much work on hand as they were at present capable of managing. In Derbyshire there has been

several strikes during the last couple of months, and a few days since the men at the Pinxton Colliery, of Messrs. COKE and Co., brought out their tools in preference to accepting a reduction of 15 per cent. In South Yorkshire the notices given by the employers it is expected will be amicably arranged. That the strikes we have alluded to can only in the end tell to the great disadvantage of the men scarcely admits of a doubt. The leaders evidently do not recognise the force of the remarks so often made, that a strike is a very foolish thing whenever it is made with a view to raising wages above that market rate which is rendered possible by the demand and supply. Now, coal is at least 50 per cent. lower than it was last year, yet the men are simple enough to think that wages under such circumstances should remain undisturbed. They also evidently cannot see that prices are still pointing in a downward direction.

For our own part we have no hesitation in stating that not only will the present price of coal have to come down considerably, but wages as well. For this the men and their leaders should be prepared. That our views as to the future of the coal trade are by no means speculative we will adduce a few facts in support of them, some of which we feel assured will astonish not a few of the colliery owners themselves. In nearly all parts of the kingdom collieries are now being opened out, although the production is in excess of the consumption, and but few persons know anything like the rate at which coal fields are being opened out. The productive power of Yorkshire in particular has very much increased during the last few years, for we find that whilst in 1868 the quantity raised in that county was 9,705,000 tons, in 1872 it had increased to 14,576,000 tons, or no less than 33 per cent. in four years. But that rate of increase, large as it is, is now being greatly exceeded, for we have it on the highest authority that in 1873 the Government Inspector had notice that during that year no less than 30 collieries had been sunk to the coal, whilst he also received notice that 94 were about to be opened out. Now, as many of those new places will raise 1000 tons of coal a-day, it is not saying too much that the increased productive power of Yorkshire will be upwards of 50 per cent. in 1876 over what it was in 1872. In the southern part of the same vast coal field some 50 or 60 new collieries at least are being opened to the Top-hard, as well as the Black-shale seams. If we take the entire Midlands, from its northern extremity to Nottingham, and include Warwickshire and Leicestershire, instead of the gross output being 25,236,000 tons, as in 1872, it will not be less than 36,000,000 tons in 1876. This increase will be due in a great measure to the very high price of coal in 1872 and 1873, and which included such a large number of capitalists to embark in the trade. In almost every other part of the kingdom the same activity has prevailed in the opening out of collieries, whilst we have every promise of a large field of the Staffordshire Ten-yard coal in operation in the course of two or three years. We believe that we are within the mark when we say that the productive power of the country in coal at the commencement of 1877 will be one-third more than it was in 1872—so as to ensure a vast surplus over our requirements. It may be asked where the colliers are to be found to work these new concerns. Our answer is that machinery for cutting coal—now being adopted at a great many places—will have to come into more general adoption, as mechanical means will be found far more economical than manual power. In addition, it may be said that in the making of pig-iron and in the raising of steam the quantity of coal required is very much less than it has been, owing to the many improvements completed during the past year. The question hereafter, in our opinion, is more likely to be what we are to do with our surplus coal than how we are to economise it for future generations. These facts should not be overlooked either by our colliery owners or those who are now seeking to keep up wages as they are at present.

call to bring new appliances into operation all at once, however skilfully they may have been devised; it also takes time to develop new workings, and a still more formidable obstacle has forced itself in the way of coalowners during the last few months in the shape of well nigh incessant labour difficulties. Hence even now our coal future is troubled.

## THE DUKINFIELD COLLIERY EXPLOSION.

The Coroner's enquiry touching the deaths caused by the disaster last month at the Astley Deep Pit, Dukinfield, stands adjourned until Whitsun week. A fortnight ago there were hopes that the inquest might be closed last Saturday, and three days' sitting were arranged for last week. On the first day the determination to sit early and late, in order that the investigation might be brought to a speedy close, was most commendable; next day it was evident that if the business was to be transacted in two days it would simply be by scrambling through it, and the coroner and jury, therefore, wisely determined to take two short sittings for that week, and then adjourn to the only week in which the professional men engaged in the enquiry were all at liberty.

It is rather remarkable that the adjournment should have taken place at a point where the interest of all who are engaged in the enquiry has been raised to a higher pitch than at any other period. Some of the jurors continue to try their prentice hands at all kinds of side issues, but the experienced men present at each sitting are gradually reducing their examination of the witnesses to a narrow compass, and it is very evident what will be the great item in the enquiry. It is necessary, in order that something like a lucid explanation of this matter may be given, to go back to the sitting a fortnight ago, when DAVID HOLMES, the chief underlooker, whose experience at this colliery extended to the time when the pits were sunk, gave his evidence. He related how 9½ or 10 years ago a great fire broke out in the mine where the recent disaster has occurred, and in the very half-moon tunnel which has been the seat of the explosion now being enquired into. The fire, he said, raged for a fortnight, and when it was extinguished there remained in the roof of the tunnel a huge cavity, the filling in of which gave deep concern to those who then held the management. The work was done by driving at a distance of about 15 or 20 yards above the mine in which the tunnel is situated, a level from the shaft to a point above the cavity. This level was 36 yards long, and the roof of the tunnel having been made good, and an opening having been made into the cavity from the level, "stuff" was wound up the shaft, wagoned into the level, and tipped into the cavity, until to all appearance it was solidly filled. HOLMES further told how, in as he positively affirms, the time of the manager (Mr. WALSHAW) who presided at this level, the gas was found in the mine.

Very circumstantially HOLMES related to the jury the finding of this fire damp, of whose presence he informed Mr. WALSHAW. HOLMES says the gas was visible in the lamp from the shaft, that Mr. WALSHAW stood in the cage while it was pointed out to him, and the same night ordered the level to be sealed up with bricks and mortar. For 4½ years this level has so remained, and when Mr. HILTON was placed in the box there was no small sensation—as sensations go in a snug and orderly Court like this—when he swore that of this sealed level he had been in absolute ignorance until after the explosion last month. For the fact cannot be disguised that this level formed a compact and not admirably arranged, reservoir, where gas might accumulate till the opportunity was afforded for its being allowed to enter the workings and do foul work. And it was this mischievous, and until this piece of evidence came out there was great mystery as to where so near the main intake it had found lodgment. Immediately following Mr. HILTON's evidence was that of his predecessor, Mr. WALSHAW, and he swore that he never heard of the level, and that he had never ordered it to be bricked up. Had he been told to deal with it he said he should have put up such a fence at the mouth as would have permitted the gas to escape and the level to be ventilated. At the next sitting was produced a witness who declared that he received from Mr. WALSHAW the instructions to brick up the opening, and that he did brick it up. He knew at the time that it contained gas, but he obeyed the orders of his employer, and made the stopping. There the matter stood when the enquiry was adjourned, and, as may naturally be supposed, the conflicting testimony in such a plain matter-of-fact piece of work as the bricking up of this opening was the main topic of conversation amongst the groups into which the enquirers formed themselves before separating for three weeks.

As to the enquiry generally, it is remarkable as being the first of any magnitude under the new law, and there can be no doubt that it marks an extraordinary change in the nature of these investigations. The appearance of eminent counsel (Mr. HORATIO LLOYD) to watch the proceedings on behalf of the Crown is an innovation in the Lancashire and Cheshire coal field; and assuredly the searching cross-examination to which the witnesses have been subject contrasts remarkably with the plain and practical sort of questioning which in other enquiries issued from the Government Inspector, or Inspectors, who were present. At this enquiry Mr. LLOYD and Mr. BELL (Her Majesty's Inspector for West Lancashire and North Wales) are, in point of fact, a special Government Commission, although they are not called by any such title, but simply appear for the purpose of assisting Mr. WYNNE, the Inspector of the district. An episode, probably unique in colliery inquiries of this particular kind, was the warning which the Coroner felt called upon to administer to the manager (Mr. HILTON), when he reminded him that his position was one of great responsibility, that he was bound to see that all the arrangements were carried out with perfect safety to the men, and told him that he was not bound to answer any question which might criminate him in the event of his being put upon his trial for manslaughter; for whatever he might say would be taken down in writing, and might be given in evidence against him. The terms of the warning were strongly reminding of the caution administered in petty larceny cases in Police Courts, and there would probably have been no mark of astonishment on the face of the legal gentlemen present if the witness had been further told that he had nothing to hope from any promise of favour, and nothing to fear from any threat that might have been held out to him to make any admission or confession of his guilt. And it must be borne in mind that there was at this time no semblance of any charge against Mr. HILTON, who acquitted himself admirably in a long and most trying examination. All the justification that could be found for such a warning was to be found in the peculiar position the manager occupies by recent legislation. It must not be presumed from these remarks that the Coroner's caution was administered in any offensive way; undoubtedly the Coroner only did his duty, and in fact the episode would call for no comment save for this fact, that it seems to imply a degree of responsibility which is sufficient to make colliery managers tremble.

The Court itself could not be more suitably constituted for its purpose under existing laws. The Coroner maintains its dignity admirably; there are not, apparently, many practical men on the jury, but the majority of the inquires maintained learned and commendable silence. Then Mr. LLOYD, more efficient counsel could not have been commissioned by the Home Secretary; in the interests of the proprietor of the colliery Mr. MASKELL PEACE (the secretary of the Mining Association of Great Britain) is specially retained, and his experience in enquiries of this kind, and his complete mastery of his work have been unmistakably evident at every sitting; for the manager appears Mr. W. G. LOWN, and the relatives of the deceased are represented by Mr. J. LOBB. In addition to the Government Inspectors—Messrs. WYNNE and BELL, Mr. S. GILROY, the assistant Inspector for the district, is in attendance; there is a host of reporters, and the background of the Court, which is held in a chaperone attached to Dukinfield Lodge, is occupied by a small crowd, who bear on their faces the indelible and unmistakable marks of the tollers in the mine.

The Court calls for no complaint, but is not the foundation of the enquiry a bad one? Should not an important investigation like this take place before a commission technically competent to deal with the matter? Why should managers of railways be certain of a fair hearing before a fully qualified man, and colliery managers be left to the tender mercies of unskilled labour? Captains of ships know they will receive a fair hearing before nautical assessors, but managers of mines may not always have to deal with so courtly a Coroner, and it would at present appear, so fair a jury as are enquiring into the Dukinfield disaster.

**SOCIETY OF ARTS.**—The Albert Gold Medal of this society, instituted to reward distinguished merit in promotion of arts, manufactures, and commerce, has been awarded for the present year to C. W. SIEMENS, D.C.L., F.R.S., "For his researches in connection with the law of heat, and the practical applications of them to furnaces used in the arts; and for his improvements in the manufacture of iron; and generally for the services rendered by him in connection with the economical use of fuel in its various applications to manufactures and the arts."

**RATING OF METALLIFEROUS MINES.**—Although, owing to misapprehension on the part of the executive of Ladywell and Roman Gravels Mines, the poor rates claimed by the parish of St. Olave have been paid; the bringing of the case before the Marton magistrates cannot fail to be of future benefit to the shareholders, and indeed to mine shareholders generally. The case had been adjourned from the previous Petty Sessions, but the representatives of the miners not having taken the proper steps for appealing, had no alternative but to pay the rates. One of the magistrates, Mr. R. Jasper More, remarked that though it was not the province of magistrates to enquire into the legality of a rate, yet, as the subject was discussed at the last meeting, he wished to say that in the latest editions of "Bainbridge on Mines," and "Burn's Justice," it was stated that neither lead mines nor the machinery or buildings connected with them were ratable. The Shropshire mining companies had neglected to appeal because the Snailbeach Company had rightly paid the rate, the distinction in their case being that the buildings rated were used for smelting. This had misled other mining companies into supposing that the rate was legal, which was maintained from the case of "Guest v. East Dean," but "wh' ch, in the opinion of one of the chief authorities from the East Dean district, was no precedent for a lead mine. Mr. Headley, of Sunderland, who had assessed these mines, has had his assessment successfully appealed against in every instance in which he had tried to impose a similar rate before. He hoped the Foden guardians would not press their rating again until it was seen on what principle the Government would assess mines, for he felt sure the principle would be different. He believed the rate would fall on the owner, not on the company, so he was disinterested in his remarks. The case has excited considerable interest in the district, an' referring to the matter, the *Sheffield Free Press* says—We call the attention of our readers in the lead mining district of South Shropshire to the remarks of Mr. Jasper More, at the Marton Magistrates' Court, on the attempt of the Assessment Committee of the Foden Union, or their clerk, to rate lead mines, or their machinery and buildings, which have never been as yet ratable by law. The cause of their exemption is clear—it is contrary to public policy to discourage such precarious enterprises as lead mining by rating lead mines in the same way as coal. It appears that the clerk to this Board of Guardians employed a stranger to Shropshire, who had failed in such attempts elsewhere, to try to im-

pose a rate on mining machinery and buildings, trusting, no doubt, to so small a master escaping the notice of the non-resident directors, until the proper day for appeal had passed. At the same time that a country board thus acted, it will be remembered that the Conservative peers last year rejected the Government Bill for extending the area of rating. Mr. More's appeal to the Forden guardians not to raise the question again until the Government make such a rate legal, will, we hope, stop the necessity of litigation on this question. If the Forden guardians were to, as we understand, Mr. More suggested from this point of view they might, employ an Anti-game Law agitator to rate the game in the Union, on the chance of any non-resident proprietor not applying in time, the Union would at all events be acting with impartiality. The preservation of game is one of those objects for which the extension of rating is more eagerly desired, than to tax mining adventures which no one wishes to put down, the high preservation of game being the means of increasing the county rate, whilst the mining adventures of the Minsterley district have, by the high wages they pay made the labouring classes content, and saved their being thrown on the rates of the Forden Union.

**EXPORTS OF RAILWAY IRON.**—The exports of railway iron from the United Kingdom exhibited some little improvement in April, having amounted to 78,203 tons, as compared with 54,305 tons in April, 1873, and 77,940 tons in April, 1872. In the total for April, this year, the United States figured for 14,323 tons; Russia for 11,799 tons; and Sweden and Norway for 11,379 tons. The aggregate exports for the four months ending April 30, this year, were 237,506 tons, as compared with 188,820 tons in the corresponding period of 1873, and 279,261 tons in the corresponding period of 1872. The United States are still our largest foreign customer for rails and railway material, having taken 42,348 tons in the first four months of this year, as compared with 81,595 tons in the corresponding period of 1873, and 180,193 tons in the corresponding period of 1872. Our exports of railway iron have increased this year to Russia, Sweden and Norway, Italy, Egypt, Brazil, Peru, Chili, British America, British India, and Australia; but they have decreased to Germany, Holland, Belgium, France, the United States, &c. The value of the railway iron exported from the United Kingdom in April was £1,003,948l., as compared with £739,833l. in April, 1873, and £787,225l. in April, 1872; and in the first four months of this year, £3,137,462l., as compared with £2,516,147l. in the corresponding period of 1873, and £2,645,476l. in the corresponding period of 1872.

#### REPORT FROM CORNWALL.

**May 14.**—We are very far from being satisfied, of course, with the state of our tin standard, even after our two rises; and it is confidently anticipated that it will be put up again, if not this week, yet in a very few days. Everything points in that direction. The American demand increases, stocks in the country are not large, and it is now admitted on all hands that Australia, at anything like the prices that have ruled of late, or that are ruling now, even with a substantial margin, need not be feared. The prospect is really a most encouraging one, and many of the weak-kneed brethren are beginning again to pluck up a little courage. Quite an interesting paragraph might be written about the absurdities into which these gentry often fall in their wild panics, and the ridiculous bargains they make. B relinquishes because A does, and A relinquishes because somebody has said something; and so, most unintelligently, the game too often goes on, and folly sets a ball rolling which wisdom cannot stop. We have had many instances of this. Matching this absurdity is the figure at which shares in some of the abandoned mines have been sold, when a moment's reflection might have shown their owners that the value of the materials and machinery would return a dividend without risk, perhaps ten times as great as the sum for which they parted with their shares. To do such adventurers justice, however, it must be stated that they are often frightened into selling in haste that they may repent at leisure, by dread of that veritable Cornish ogre, the Stannary Court. There has been very little said of late about the reform of this venerable institution, perchance from the hope that ere long it may be removed off the face of the earth, and its business transferred to the County Court. But that may be a long while coming, and in the meantime there are reforms that might be made. For instance, the Court might hold its sittings in various towns, like the County Courts, and it might appoint liquidators outside its own official borders. If private persons can discharge the duties of trustees in bankruptcy, why not of Stannary liquidators?

North Crofty dies hard. It was thought that at Tuesday's meeting the "bal" would have the *coup de grace*; but no, there is yet another chance. The present company has been so diminished by relinquishments and other causes that it cannot carry on the mine. Indeed, from a set of peculiar circumstances it is impossible even to get the required three-fourths in value to decide on its sale as a going concern. Tuesday's meeting would, therefore, have resulted in a resolution to pull up the pitwork and sell the machinery and materials, to the great detriment of the Setons and other neighbouring mines. At the last moment, however, Mr. Bassett stepped in to prevent this calamity. His representative served notice that a resolution to sell as a going concern, being a breach of the covenants in the lease, would be, as a forfeiture, followed by entry on the part of the lord, and that he required 40 days notice, as provided for in the lease, to decide whether he should take the plant at a valuation. The step was taken by Mr. Bassett, as was explained, not to injure North Crofty, but in the interest of the district, the object being to have the mine kept in fork until an attempt had been made to get it taken up by a new company, for which the 40 days named will, it is believed, suffice. The North Crofty adventurers will not suffer, at least materially, by this delay, for it would take them a month to clear up, and at the end of the 40 days, if no arrangement is made, it is understood that they will be at liberty to adopt what steps they please. So matters now rest. It is to be hoped, in the interest of the district that North Crofty may be kept on; if not the engine ought to be kept going at the rateable charge of the mines benefited. It appeared not improbable at one time that a curious question would arise out of the complication—the liability of mine lessees to perform the covenants in a lease which the adventurers fail, and cannot be made, to do. The general legal opinion is that in such a case the remedy is against the lessees.

The Bill for the rating of mines, which was rejected last year, will be re-introduced by the Government in a few days, and, in all likelihood, will pass.

A case of very considerable importance to investors in mining property has been tried in the Exchequer Court. It may be remembered that upon the formation of the Belowuda Beacon Tin Mining Company (Limited), which was started for the purpose of working a mine in the parish of Roche, a prospectus was issued with a clause to the effect that the vendors guaranteed 10 per cent. on the subscribed capital for three years. Mr. George Howes, a Liverpool merchant, bought some shares; now the mine is wound up, and Mr. Howes, alleging that he purchased, in consequence of the guarantee of the vendors, brought an action against them to recover the price of the shares. The defendants pleaded that the guarantee was conditional on the mine being properly worked. They alleged that the mine had not been worked in a proper manner, and that, owing to this and insufficient support from the public, the hopes of the guarantors had not been realized. Ultimately a verdict for plaintiff for 105l. was given by consent. This decision will make guarantors careful to see that they themselves are guaranteed.

The broad-gauge interest have been unable to acquire the Great Western Docks at Plymouth, whereat so much of the Cornish china clay is shipped on the exclusive terms which they desired. The Parliamentary Committee have decided that the narrow gauge, which is really already the gauge of the county, shall not be shut out.

The Bill authorising the construction of the St. Austell and Pen-towan Railway has had its clauses passed by Lord Redesdale, all opposition having been withdrawn, and will shortly complete its remaining formal stage. The line, with which is connected the dock at Pentewan, will be a conversion of the tramway existing between the port and St. Austell, with additional extensions running to the china-clay districts north of St. Austell and a short branch to the vicinity of the Cornwall Railway Company's station at that town. The gauge (2 ft. 6 in.) is 6 in. wider than the Festiniog Railway, lately so well known from its being continually used as an illustration of the advantages of economical narrow-gauge lines by Mr. Fell and others. The St. Ives Railway is to be completed next year.

Messrs. John Freeman, the well-known granite merchants of Penrhyn, Llanrhaeadr, and the Cheesewring, have been the victims of a rather large peculation by a confidential clerk. A junior clerk was found deficient in his stamps to the amount of £1., and no satisfactory explanation could be given. The youth left the town and went to Bristol, Messrs. Freeman being absent from home. He was followed to Bristol, where he made a confession which implicated another clerk, named Burrows, and Burrows also decamped afterwards with 250l., which he had obtained to pay the men at the Cheesewring quarry. It was found that he

had also falsified the books to the extent of several pounds a week. Burrows lived at Falmouth in some style, and was the chief agent of the Conservative members of Parliament for the borough—Messrs. Fowler and Eastwick.

#### REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

**May 14.**—The strike of miners in South Staffordshire has been considerably reduced in its proportions this week by the return to work of a large number of the non-unionists. The collieries of the following firms, after six weeks idleness, have in consequence been enabled this week to resume operations:—Messrs. H. P. Whitehouse, Messrs. Groucott, the Chillington Company, Messrs. John Bagnall and Sons (Limited), and Messrs. Foster, of Shutt End. The demand for coal in the district is so quiet that were the whole of the miners to resume work there would not, it is estimated, be at present more than half employment for them. Under these circumstances it is highly probable that wages will have to be reduced to a considerably lower standard than that at present proposed. The action of the non-Union men leads to the belief that a collapse of the strike is not far distant. Meanwhile, business throughout the district continues in a very unsettled and unsatisfactory condition, from which nothing but cheaper fuel and labour are likely to raise it.

The Iron Trade of South Staffordshire is in a very languid state. Pig-iron is in especially restricted demand, although makers are quoting as low as 3*l*. 10*s*. to 4*l*. for cinder, and 5*l*. 10*s*. to 6*l*. for all-mine, according to brand. Out of 153 furnaces built in the district not less than 104 are out of blast. The following firms have each three or more furnaces idle:—Messrs. Addenbrooke and Co. (3), John Bagnall and Sons, Limited (5), New British Iron Company (4), Colbourne and Sons (4), Chillington Iron Company (4), Castle Coal and Iron Company (4), Fletcher, Solly, and Urwick (3), Osier Bed Company (3), W. Roberts and Co. (3), W. and S. Sparrow and Co. (5), Willingsworth Company (3), and Wood and Co. (3). Others are likely to be either damped down or blown out unless matters take a speedy turn. The finished ironmasters are in some cases asking somewhat higher prices this week for certain classes of iron, notably sheets, stocks of which in the market are very low. Small parcels have changed hands at an advance of 1*l*. per ton on last week's quotations. Bars are still quoted by the leading firms at the rate of 12*l*. per ton, but good merchantable iron is obtainable at 11*l*., and common bars at 10*l*. per ton. Galvanised sheets are without change.

Last week we inadvertently mentioned Fair Oak as the site of the last Cannock Chase coal discovery. This was a mistake. The new sinking of the Cannock and Rugeley Colliery Company is the one to which our paragraph had reference. The sinking is at Hednesford, and has proved the existence of all the regular Cannock Chase seams under a considerable area hitherto unproved. The Bunter conglomerates were found to extend to a depth from the surface of 80 yards, and immediately underneath were the top coal measures. The flow of water in the conglomerates was very considerable, and it was found necessary to put down 73 yards of cast-iron tubing, a plan successfully adopted at most of the Cannock Chase mines. It is intended to work the shallow and deep coals first. These lie at respective depths of 430 and 450 yards, and are pronounced of excellent quality. The plant being put down at this new colliery is of very fine description. At each shaft will be a pair of 32-in. cylinder engines, with 16-ft. diameter drums, and the entire apparatus is on a scale of equal efficiency. The general manager of this important company is Mr. John Williamson.

The Duke of Sutherland has commenced on an extensive scale the southern part of the North Staffordshire coal field, and in connection with the enterprise he is about to construct, with the sanction of the Board of Trade, a private railway from the scene of the trial borings near Lightwood to Blurton, where the Duke has a large brick-making establishment, and thence to the bowling-green at Trentham.

The market for stocks and shares in local industrial concerns continues to be affected by the general depression in the trade. The following are among the latest quotations:—Ivy House and Northwood Colliery (7*l* paid), par; Sandwell Park Colliery (A and B shares), 500, sellers; Cannock and Huntington Colliery, 1*l* buyers; Patent Shaft and Axe, 5 prem.; Birmingham Wagon (10 paid), 18*l* sellers.

The North Staffordshire ironmasters are coming to the conclusion that the worst of the crisis is over, and that a steady amendment of the trade may now be reasonably looked for. The demand has improved somewhat since our last report, and the mills are doing from six to eight turns per week. Orders for rails are scarce, and the mills specially devoted to that class of iron are not doing much. The pig-iron branch is without alteration. Coal and ironstone are, on the whole, in steadier demand.

#### TRADE OF THE TYNE AND WEAR.

**May 14.**—The Coal Trade has been exceedingly good in Northumbria during the past week, partly owing to the great strike in Durham, 200 colliers having been on strike in the latter county during the whole of last week. Steam coal prices have, therefore, been well maintained. As the enginemen in Durham went in on Thursday it was fully expected that the whole of the collieries would be at work on Monday, but a new difficulty was started by the men, as they requested that all collieries should be worked only five days per week instead of eleven days per fortnight, as is done at many works, and especially at those producing coking coal. The masters, however, are very firm in adhering to the rules in force before the strike, and a notice was posted at all the collieries on Saturday to the effect that the works would be started on Monday on the same conditions as before the strike, and with the reductions in prices agreed upon. In consequence of this notice many of the large works were not started on Monday, although Mr. Crawford, on the part of the executive of the Miners' Union at Durham, strongly advised the men in all cases to start work. Of course, the head quarters of the disaffected party is at Houghton, in the great Hetton district, where Mr. Pritchard is leader, and he appears to be at open war with Mr. Crawford and his colleagues. However, a large number of collieries was started on Monday, and since that time the number has been increased. About one-third of the colliers in Durham remain out, but if the Cleveland miners continue out, which is likely at present, the demand for coal and coke produced in Durham is to be very moderate indeed, as 75 per cent. of the coal and coke produced in Durham is consumed in the Middlesbrough district. It is quite clear that the existence of South Durham as a great coal and iron producing district is in great peril. A large number of colliers are on strike, and the whole of the iron ore miners are also out, and it must be noticed that the action of the men in both cases is utterly against the course advised by their head agents; it is, therefore, quite clear that these men have succeeded in forming a Union and in establishing an organisation which is powerful for evil, and which they cannot control. They can, it is clear, lead the men so long as they are advancing, but when a retreat is even sounded utter rout, disorder, and mutiny occur in the ranks of the motley army of 40,000 men they have attempted to reduce to discipline. In Durham the men have with an ill grace submitted to a reduction of 10 per cent., but at the same time they have attempted to make a reduction in the number of working days, which would have the effect of depriving the master of any benefit from the reduction, and which would ultimately seriously injure both parties. The Cleveland men refuse to submit to a reasonable reduction in the face of a rapidly falling market.

**NEW WINNINGS FOR COAL.**—Good progress continues to be made with most of the new coal works in this district, although house building and other surface plant has been in many places considerably checked, owing to the adverse change in the coal trade. In Northumberland two shafts have been commenced at Churton Bank, 43 miles north of the Tyne. Two seams have been proved here by boring, both under 3 ft. in thickness, and the projectors confidently expect that a four-feet seam will be found at a lower level, although there has been some controversy on this point. This opinion is founded on the fact of the existence of the four-feet seam alluded to in adjoining royalties. Large beds of excellent limestone are also found here, and it is intended to work these beds extensively, there being a great demand for lime in this great agricultural district, as well as coal to work the steam-engines, which are now greatly used in the cultivation of the land. Many other large works are in course of sinking at Ashington, Stobswood, Acklington, Shire Moor, Whitley, &c.; at most of these places the sinking is being prosecuted with vigour. At Redheugh, on the west side of Gateshead, two large shafts are in progress, the largest working shaft being 16 ft. in diameter. It is intended to erect a large number of coke ovens here, in order to manufacture coke from the lower beds of coal expected to be found, and thus to work the extensive beds of fire-clay which are found here, and manufacture fire-bricks, &c. A dinner was given to the workmen on Saturday, on the occasion of proving the first seam of coal. At Norwood, where one shaft was opened last year, a good deal of coal is now worked, and two more shafts are being opened out. At Axwell Park two shafts have been sunk within the last two years, and coal is being worked, and it is expected that the quantity raised will be gradually increased. The second shaft at Silksworth has just been got down to the Hutton seam, and sinking operations, which have been going on here nine years, are now nearly brought to a close. At Ryhope, south-east of Silksworth, coal is now worked extensively under the German Ocean, and the explorations here will give some idea

of the breadth of coal being worked from west to east in the Durham and Northumberland coasts. Should the coal rise rapidly eastwards, or should large faults be met with in that direction, the width of the coal field might be seriously reduced. The result of the explorations here will be watched with much interest.

The Iron Trade is, of course, in a very disturbed state, and but little business of any kind is done. The finished iron masters are in a better position at present than they have been for a long period, as they have reduced the price of labour, and a great reduction in the value of fuel has taken place.

The Chemical Trade has been depressed a long time, and owing to the depression and consequent low prices, with at the same time greatly enhanced prices of fuel, the manufacturers have been compelled to make a reduction of 10 per cent. in wages, but this reduction the men refused to accept, and a large number, upwards of 3,000, came out on Saturday on strike. It is, however, expected that it will not be of long duration.

Telegrams from the Durham mining districts announce that the resolution of the Miners' Council in relation to working five days in the week has been rescinded by 165 votes against 49; that every matter in dispute is now ended, and that it is expected all the pits will be in full work by Monday at the latest. Whether the Cleveland ironstone miners intend to continue on strike is not stated. Should they do so, the fall in the price of coal will be accelerated, since the Cleveland districts, when in work, absorb by far the principal portion of the Durham yield.

#### REPORT FROM SCOTLAND.

**May 13.**—There was considerable activity in the warrant market during the latter part of last week; the price fluctuated between 8*s*. and 8*l*. 6*s*. and closed on Friday afternoon at 8*s*. 6*d*. This week the tone has not been so good; on Monday business was done from 8*s*. to 8*l*.; yesterday the opening price was 8*s*. 6*d*., and it steadily improved up to 8*s*. 3*d*, which was the closing quotation, and today, although the opening price was 8*s*. 6*d*., the market gradually gave way, and business was done to 8*s*. 6*d*., which was the closing quotation. The trade remains in a most unsatisfactory state; prices are maintained, not by a healthy demand, but only by the greatly diminished stock and restricted production, while the uncertainty regarding the supplies of iron and fuel tends to increase the existing depression. It is impossible to give definite quotations for the various brands, but good ordinary No. 1 may be quoted 8*s*. to 9*s*.; No. 3, 8*s*. to 8*l*.

	SHIPMENTS.
Week ending May 10, 1873	Tons 14,000
Week ending May 9, 1874	7,372
Decrease	6,718
Total decrease since Dec. 25, 1873	73,309
Imports of Middlesbrough pig-iron into Grangemouth:	
Week ending May 9, 1874	Tons 3,120
Week ending May 10, 1873	1,690
Increase	1,430
Total increase for 1874	22,977

The iron furnaces have only as yet been blown-in to the extent of about 70. Some of the brands are still out of the market, and prices vary with the action of the miners and the operations of speculators. The iron masters have assumed a very decided attitude with regard to the 40 per cent. reduction, having absolutely refused to lessen it, and have adjourned their meeting for a month.

Last week, and even this week, the malleable works were borrowing coals from each other, when they were not actually topped for want of fuel, their own pitmen being out on strike, the price of manufactured iron not being sufficiently remunerative to enable them to purchase suitable coal from the salesmen. Last week a few extra orders were placed, in the fear of prices advancing with the price of pig-iron, but this week prices are very easy again, the North of England people competing very keenly with local makers for all classes of ship iron.

Couls are pretty plentiful, as the salesmen's men are mostly working at the reduction of 20 per cent., but prices are so variable that it is difficult to quote, each buyer doing the best he can for himself. The shipments for the week show a falling off, being 27,870 tons, against 39,191 tons in the same week last year.

#### REPORT FROM MONMOUTH AND SOUTH WALES.

**May 14.**—The difficulties which have threatened this district for some time appear now to have begun to set in. Contrary to expectation, there has been a disruption at Cyfarthfa, the property of Mr. Crawshay, and it is feared that the dispute will not soon be settled. The notice for a termination of contracts was issued at Cyfarthfa sooner than at any other establishment, and naturally if any disagreement at all was to take place it was to be expected at those works. Some of the men, towards the end of last week, agreed to work on at a reduction of 10 per cent., which was conceded, but the general reduction announced is 20 per cent., and this the majority of the ironworkers and ironstone miners have determined to resist. They were, in fact, under the impression that they have been singled out as a "feder" for the masters who, with his sanction, have taken advantage of Mr. Crawshay's independent and wealthy position to try the effect of the 20 per cent. reduction. The workers have, therefore, determined not to resume work on any reduction whatever until at least the notices have expired at the other iron-making establishments, so that all the employees can agree upon one general course of action. What the master will be will, therefore, remain in abeyance until about the end of the current month, but it is understood that many of the workers, if not all, will be willing to accept a 10 per cent. reduction. If this will satisfy the iron and coal masters, then there is a probability that there will be little or no stoppage of operations; but if they persist in a 20 per cent. reduction, then there is nothing to be apprehended but a severe struggle.

As might be expected under the present unsettled state of things current, business only gets more and more dull. Whatever orders buyers may have in their hands they cannot place many more until manufacturers and their men have come to some definite understanding in regard to the wages question. In this cloud of confusion one cannot see what the real position of the trade is, but there is no reason for believing that there would not be so much room for complaint if capital and labour could pull together better than they do. Some of the largest ironmaking firms in the Principality are now obliged to decline some orders that were offered to them, and it is stated that the contracts are, consequently, transferred to Belgium. There is no doubt that the Belgian makers are competing keenly.

The process of blowing out has been commenced at the Forest Steel and Iron Company's works at Tredegar, a large number of the men having refused to resume work on the 20 per cent. reduction which has been enforced.

The lock-out in the Tin-Plate Trade appears to be as far from terminating as ever. The masters have declined to confer with the men unless they withdraw unconditionally all the claims which they have preferred. After holding a number of meetings the men have come to the conclusion not to return

kingdom—especially in the Midland coal field, of which Derbyshire forms a part—know very well that even the present prices are not likely to be maintained.

The Sheffield Trades are much the same as when last noticed. Quietness prevails at most of those engaged in light work, and at some of them the men are not fully employed. The heavy armour plate mills are doing well, as are those rolling ship and boiler plates. Forgings, too, are in tolerably fair request, and there is a little more doing in railway material. The malleable works at Kidderminster are doing well and turning out considerable quantities of those highly finished and exquisitely designed castings for which the firm of Crowley and Son enjoy such a high reputation. The Bessemer establishments are doing very well, there being considerable orders in hand for rails and forgings.

The Coal Trade has been quiet, and at several collieries in South Yorkshire the men are working short time, whilst at others there are considerable stocks of "hards" on the banks. The great event of the week has been the meeting of the miners' delegates and the colliery owners at Barnsley, which took place on Tuesday. There were upwards of 100 delegates present, and the proposed 12½ per cent. reduction was all but unanimously condemned as uneeded for. The men, in fact, showed no disposition to allow of any reduction, and it may be fairly assumed that they expressed the opinion of the 23,000 men they represented. A resolution was passed to the effect that the time for a reduction of the miners' wages in South Yorkshire and North Derbyshire had not yet arrived. On the other hand, several of the masters considered that 12½ per cent. reduction was too little, and that in the event of the offer not being accepted it would be advisable to lay the pits down until the men changed their minds. Ultimately it was arranged that the decisive answer of the men should be given to the colliery owners on Tuesday next.

A large number of gentlemen, engaged and interested in the working of mines in South Yorkshire, assembled at Barnsley on Tuesday, to witness a series of experiments with Denayrouze's patent mining apparatus, for enabling miners to descend into collieries after explosions have taken place, and into rooms or places filled with explosive or poisonous gases. Amongst those present were the Mayor of Barnsley, and a majority of the Town Councillors and Aldermen; Mr. Huntress, manager, and Mr. W. Wilson, underground viewer, Darnfield Main Colliery; Mr. A. Chambers, of the firm of Messrs. Newton, Chambers, & Co., the Thorncleiff and Chapeltown Collieries and Ironworks; Mr. Hartley, manager, the Silkstone and Dodworth Iron and Coal Company (Limited); Mr. W. H. Peacock, Secretary of Midland Institute of Mining Engineers; Mr. Maddison, manager of Woolley Collieries; Mr. Daffy; Mr. Hutchinson (Hutchinson Brothers, engineers); Messrs. Normanell and Casey, secretaries of South Yorkshire Miners' Association, &c. Mr. R. Applegarth, of London, the agent to the patentees, gave a brief description of the apparatus. The first experiment was with a patent lamp, by Mr. M. Denayrouze, which was tested in order to show that it would burn freely and without danger, amidst explosive gas. Another lamp was shown and exhibited in a large cask filled with water, in order to show that it would burn freely therein. Messrs. Halborn and Salmon, two of Mr. Applegarth's assistants, next were attired with the apparatus used for entering collieries, &c., filled with gas. Both made their way into a large warehouse impregnated with noxious gases and remained therein for some time. In the meantime water was being pumped by four men outside. Afterwards, the captain of the Barnsley Corporation Fire Brigade entered the room with the apparatus. The experiments created a good deal of interest.

#### NEW AND ECONOMIC PUMP.

The extreme simplicity and great water-raising capacity of the very primitive form of pump met with in some of the old Spanish mines, and consisting merely of a wooden tube, of length corresponding to the depth of the shaft, with an endless rope carrying at intervals a bunch of sheepskin, has been admired and favourably reported upon, so far as the principle is concerned, by some of the most competent engineers who have been entrusted with the management of mines in modern times, but all have concurred that obvious want of durability and general roughness of the contrivance rendered the introduction of various improvements absolutely necessary to enable a pump upon this principle successfully to compete with the other forms of pump at present in use. It was seen at once, for example, that the square wooden box through which the water was raised would have to be replaced by a metallic tube, and that even in the improved kind of cylinder thus suggested the bunch of sheepskin was certainly not the most economic form of piston that could be adopted. The question then which presented itself for the solution of inventors was how to utilise this principle of lifting the water only without any dead weight (for it was admitted that in a properly-constructed pump of this class the descending pistons might be made exactly to counterbalance those ascending through the tube), and at the same time reduce to the minimum the friction between the tube and pistons, as well as that about the wheel by which the pistons were put in motion.

To the solution of this question inventors have energetically applied themselves during the past century, the first real progress being that made in the chain-pump, invented in 1790 by Mr. Depronny, who used an iron tube with a chain running through it, affixing upon this chain at short intervals from each other a series of discs, to which leather washers were somewhat roughly fastened to serve the purpose of packing. The hardening of the leather after being in the water, and the impossibility at the date of the invention of obtaining a tube with anything like a smooth interior surface, gave rise to several annoying difficulties in the practical working of the pump—that of steering between too much friction on the one hand, and sufficiently tight packing to prevent the descent of the water when the pump was stopped being the principal—led to the abandonment of the invention; but not before Depronny had done enough to prove that it was in mechanical details only that the chain-pump was defective. In the ordinary working of the pump a large quantity of water was raised with comparatively little power, but the misfortune was that perhaps at the most inconvenient moment the chain would break, and the whole series of discs would fall to the bottom of the pit, necessitating considerable delay in getting the pump at work again. This, coupled with the annoyance of the pump being temporarily unserviceable if it was left idle for a time, created a prejudice against the system which subsequent inventors have found it difficult to remove.

Notwithstanding this, various efforts have been made to perfect the pump, and it must be admitted that many inventors have made very important corrections of the mechanical defects, not the least of these being those embodied in the invention of Mr. Jules Bastier, which in the hands of an energetic Englishman or American would, no doubt, have realised a fortune, for although the difficulty of the breakage of the chain remained unsurmounted, and the discs were capable of further improvement, there was no question that Bastier had the germ of a good invention, which only required careful development. He recognised the fact that England and America were the most fertile fields for introducing an invention for the more economic raising of water, but with the most contracted notions of a Frenchman, and with such inability to learn our language that after ten years residence in England he could not carry on an ordinary conversation, he sought to develop the invention single-handed, to superintend the manufacture himself, and demanded heavy royalties for the use of the invention; his constant challenge being, until he had reduced himself from affluence to poverty, that he would put down a pump at his own expense, but that if it worked as he promised he would have his own price for it. From manufacturers who would have undertaken the working of the patents, and had influence to promote the adoption of the pump, he demanded 25 per cent. upon the selling price; the natural consequence being that the invention was neglected until the patents had expired, and the trifling modifications necessary to make the pump a practical success were never brought forward.

But the unsuccessful efforts of Depronny and Bastier have not failed to produce good fruits, and it is now confidently believed that the last of the mechanical defects which have hitherto prevented the general adoption of this principle of pumping have been removed. Mr. FRANCOIS MARTIN, of Rue Laugier aux Ternes, Paris, an ingenious mechanician, who has had considerable experience in the actual manufacture of pumps of this class, and has, therefore, had the best possible opportunities of observing the defects, and judging of the readiest means of removing them, has constructed working models of pumps upon the principle of the chain pump, but in which the inconveniences referred to—the breakage of chain and defects of the pistons—are entirely overcome, and he is now seeking the assistance of an English or American capitalist to join him in securing the necessary patents. The action of the model is as near as may be perfect. The system which he uses for the packing of the pistons is admirable, since there is scarcely more friction than in the best form of steam-engine cylinder, although they are sufficiently tight to hold up the column of water for many hours. With material of ordinary quality it is most unlikely that any breakage would occur between the pistons more frequently than the breaking of the piston-rod of a steam-engine, whilst in the possible contingency of such a breakage the pistons would not, as in the chain-pump, fall to the bottom of

the pit, but the evil could be remedied in five minutes. These facts, coupled with the circumstance that the pump can be cheaply constructed, should suffice to ensure its general introduction.

#### THE COAL CRISIS IN FRANCE.

Our readers are doubtless aware that a French Parliamentary Commission has recently enquired very exhaustively into the subject of the coal industry of that country, and has been the means of bringing to light many facts of the greatest importance concerning the matter under investigation. Subsequent to the sittings of the Commission many reports have appeared from the different mining districts containing suggestions as to the remedy of what has been called there the coal crisis, and speculating as to the causes which have contributed to the recent agitation in the trade. One of the most valuable of these reports emanates from the extensive mining district of the Loire, and as it deals with the subject very thoroughly, and gives facts which will be of interest to the readers of the Journal, it may be useful if we give the subject of such information as is worth reproduction. The first point alluded to is that the price of coal since the late war has greatly increased in France, and that there has been an inadequate supply. How have these results been brought about, and in what measure have they been brought about by the coal miner, the merchant, or the speculator? It has been pointed out that the advance of price has been merely sufficiently remunerative in the circumstances, while it has had this result—it has given a great impetus to production in the mining districts, and in that sense must be considered satisfactory. Again, it is important to note this fact, that the production of coal in France has been always inferior to the consumption, and, consequently, the necessity has been imposed of compensating for the deficiency by the importation of coal from other countries. With regard, therefore, to the causes which have contributed to the agitation in the French coal trade, it is argued, and with great reason, that this agitation has not been caused by any diminution in the production, and that it cannot properly be attributed to the coal miners, as statistics show that the produce of the mines has increased of late years. It is claimed, indeed, and the facts support the claim, that the French coal miners have not been in any way unenterprising in this matter, but, on the contrary, have done all they could to mitigate and avert the evil. Although they have been surrounded by numerous embarrassments during the past year or so, they speedily repaired the ravages of the late war, and exceeded the amount of coal produced before the occurrence of that calamity. The deficiency of supply, consequently, cannot be attributed justly to them, but rather to the unexpected falling off in the foreign imports.

In regard, moreover, to the general discussion upon the coal crisis in France, two points are brought prominently into notice, and they are these:—1. That the coal crisis was broadly considered, the result of the special requirements of consumption caused by circumstances by no means peculiar to France alone, but felt in other European countries, and aggravated by exaggerated fears as to the deficiency of supply.—2. That the dangers of the French coal trade are thus shown to be great from the difference between the amount produced from the native mines of the country and the consumption. Consequently, in order to avert these dangers, the importance of extending the mining industry, of opening up new mines, and thus increasing production, is clearly demonstrated. It is seriously urged upon the Government that they should assist in this work, though not by measures of coercion, as has been the case, but by removing from the mines all unnecessary obstacles of legislation, with which they have previously been troubled. It is stated that the particular advantages which this branch of the mining industry in France needs to assist in its development are certain reforms in the mining law passed in 1810—a better supply of miners, and improved transport facilities. In some respects, it is contended that the mining legislation complained of tends to discourage rather than encourage mining enterprise, and that it legalises restrictions which are wholly unnecessary. Serious attention is also directed to the want of labour for the mines, the development of which is greatly impeded on this account. It is stated that the mining district of the Loire suffers materially from this cause, as, indeed, do all the collieries more or less. The workmen, as a rule, prefer other avocations, where there are not the same dangers and special conditions of working as experienced in coal mining. Parents do not bring up their children so constantly to the mining industry as they formerly used to do, and as the miner's work requires special aptitude, another annoyance is experienced from the want of such knowledge. It is necessary, as this report points out, that the miner should not only possess physical strength but the art to carry out his work properly, the prudence which enables him to avoid danger, and the courage to brave it.

The French mines, however, not only suffer from the insufficiency of workmen, but from the inexperience of those who are employed.

The amount of actual work done by the miner appears also to gradually decrease. In proportion as his wages are raised he shows a more or less marked tendency for mischievous pleasures, which deprave and enervate him. But it appears that merely raising the wages, even when combined with other advantages, is not sufficient to make the mining industry popular with the French workmen, and the question thus becomes a rather puzzling one for the owners of mines. To their credit, moreover, must it be said that they do all they can to attract labour in their direction by attention in every way to the well-being and comfort of those they employ. One suggestion in the way of adding to the popularity of this trade is that the miners should be partially exempt from the system of military recruiting, but in the present state of affairs in France it is impossible to say how far such a suggestion is likely to meet with favour and support.

#### THE "KAINOTOMON" ROCK-DRILL.

This machine, which was introduced about a year ago by Mr. Thomas A. Warrington, not only maintains what was claimed for it on its introduction—its superiority as a rock-drill—but it has proved itself to possess the all-important quality of durability, or non-liability to derangement and breakage. The constant liability to breakages in the earlier rock-drills has undoubtedly been the greatest drawback to their general adoption for mining and quarrying purposes. There can be little doubt that by the aid of an efficient and durable rock-drill enormous savings in money and time might be effected as compared with hand labour; that this is so is proved by the numerous inventions of rock-drills which have been patented within the last few years, and the numbers of mining men who have derived advantage from using even inferior machines. The difficulties, however, which have existed of obtaining all that is required of a rock-borer appear to have been considerable, if we may judge by the few machines that have shown themselves worthy of notice. We may mention one of the difficulties that have been overcome by the Kainotomon. In other hand-feeding rock-drills when the attendant overwinds the machine by even half an inch it stops, has to be wound back, and the piston-rod pushed out before it will start again. The Kainotomon, however, is so constructed that it may be wound 2 in. out of stroke without causing it to stop, the only alteration being a shorter stroke; this is undoubtedly a great advantage, as it is next to impossible to regulate the feed always to such a nicety as not to frequently stop the machine, where half an inch over-winding will do it, the stoppages naturally causing trouble and delay, and deteriorating the usefulness of the drill.

We are credibly informed that out of the great number of Kainotomon drills which have been distributed in almost every European country there have only been two trivial breakages that have come to the knowledge of the manufacturers during the twelve months the machines have been in constant use. This must be very gratifying to the owners, and is not uninteresting to ourselves, who have advocated the importance of simplicity and durability in rock-drills, in order that they may be advantageously used for developing mines and other enterprises where rock has to be blasted, especially in such cases where the mines could not otherwise be profitably worked.

Besides the Royal Mines of Prussia, where two of these rock-

drills were in constant use for six months without repair, and the authorities gave a large order for Kainotomon drills and air-compressors, Mr. Warrington's drills have been largely adopted at the following important mines and collieries:—The Blanzy Collieries, in France; the Eitorf Mines and Zukeröla Mines, in Germany; the Montreal Hematite Iron Mines, Cumberland; the Barrow Hematite Iron Ore Mines, the Greenside Lead Mines, and the South Wales Company's collieries. In addition to these a large number of companies and firms have purchased Kainotomon drills, among whom may be mentioned:—The Misterhult and Solstad Mining Company, Sweden; the Tharsis Copper Mining Company, Spain; the Mina de Lapilla Company, Spain; the Klosters Aktiebolag; the Dalzellington Iron Company; Messrs. J. Freeman and Sons, Penry; the Moss Hall Colliery Company; the Pant-y-Mwyn Lead Mining Company; the Summerlee Iron Company; Messrs. Whitley Partners, Leeds; the Eglington Iron Company; Mr. P. McGinnis, Strabane; the Manchester, Sheffield, and Lincolnshire Railway; Messrs. Lancaster and Co., Prescot Colliery; Messrs. Charles Dixon and Son, Sheffield; the New Quis Coal and Cannel Company; W. Torrance, Esq., Mid-Calder Lime Works; the Glamorgan Coal Company; Messrs. Hydes and Drill, Sheffield, &c. This extensive adoption of the Kainotomon drill by important companies shows that those most interested in mining are becoming fully alive to the importance of rock-boring machinery.

#### ROCK-DRILLING—THE WARING DRILL.

It has been remarked that the perfect drill is the simplest machine that will perform the required work with certainty and economy; but the motions necessary to accomplish this work are numerous and delicate, and the task of devising the best mechanism for the purpose is so difficult that many years have already been spent in it. It is generally considered in America that to obtain the proper force the full steam pressure must be used through the whole stroke, and, as the reciprocal motion of the piston is entirely unrestrained by a crank connection, it is necessary to provide a very perfect and instantaneous valve-action that will prevent the piston from striking the heads of the cylinder. In a rock-drill, therefore, three distinct motions must be provided for—the valve action, the feed, and the rotation of the drill. All of these must be so arranged as to answer certain positions connected with each one—the parts must be durable, and the arrangements must not be complicated. The Waring drill is claimed to fulfil all these requirements in a very beautiful manner. It consists of a cylinder, which is made several times as long as the stroke, for the purpose of providing within it space for the several parts. The cylinder, therefore, acts both as a steam cylinder and as a housing for the mechanism, of which only two parts project—one being the piston-rod, and the other the feed-screw. The valve is placed in the centre, and works diagonally across the cylinder, instead of in the direction of its length. The valve has a boss which reaches down through the wall of the cylinder, and fits in an inclined slot cut in a piece of brass which is let into the piston. This slot has curved ends, so that when the end of the stroke is reached the valve is thrown sideways, and the course of the steam is reversed. The action is positive, the mechanism free from springs, and, as the movement of the valve depends upon the position of the piston, reversal must take place when the piston arrives at the proper spot. Nothing more accurate and certain could be conceived, but experience has shown that a good valve action is not the only requirement for the control of the piston. The machine can start at any distance from the rock, and work its own way down without injury and without striking the head; in fact, it has been run fifteen minutes with a man turning the feed back as fast as the machine carried it forward, so that the rock was not reached at all. Next in importance is the feed, which is entirely automatic. The steam cylinder is placed in guides, and held in position by a screw working through a yoke fastened to the guides. On this screw is a face ratchet, the teeth of which engage the teeth of a similar ratchet which is placed on a tube that runs into the piston. This tube has slots with curved ends, and in these slots work pins driven through the piston. So long as the drill strikes a good blow these pins run up and down the straight part of the slots; but when the hole has been cut away enough to let the pins down to the curved part of the slots the tube receives a partial revolution. The ratchet on the tube acts on the corresponding face ratchet, and turns it a little way down the screw, by which the cylinder, with all its attachments, advances on the guides, and the drill is brought up to the rock. This feed motion requires no adjustment. It is always right, acts fast in soft rock, and slow in hard rock. The turning of the drill is accomplished by a mechanism quite similar to the feed, but placed at the other end of the cylinder. It is hardly necessary to describe it, as this, though a necessary part of the drill, is one of the least difficult to provide. At each back stroke of the piston the drill makes a 1-15th revolution.

#### GENERATING OF STEAM.

A very important invention, especially applicable for underground use in connection with coal-cutting machinery, and pumping water or air in mines, is a new mode of generating steam and expanding gases combined for obtaining motive power, also devapourising steam, which is recently brought out and patented by Messrs. HURD and SIMPSON. The space required for the apparatus is very small when compared with existing regenerators, whilst the combustible power is so thorough and intense as to use every particle of fuel charged, excepting the smallest quantity possible, which is used to ignite the re-charge of fuel when required. The steam is raised with great rapidity from cold water up to a high pressure; whilst, owing to the uniformity of the water level, there is no possibility of an explosion taking place. The other special advantages claimed for the new steam and power generator are the entire absence externally of smoke or vapour, and the devapourising of the exhaust or escape steam by causing it to pass through a heated apparatus. The generator itself consists of a fire receptacle placed in the interior of the water space of a steam-boiler of any form, and is provided with a self-acting breech-loading contrivance at the feed entrance in such a manner that it may be recharged without the possibility of any escape of gas from it. The receptacle is also provided with similar contrivances for the discharge of any portion of fuel that may not be consumed, whilst it is so constructed that the exhaust steam from engines worked by the generator is conveyed to the interior or around the receptacle, so as not to come into direct contact with the fire contained in it, but into a chamber composed of fire-clay and black-lead, or any other material most suitable to withstand intense heat, and where on its entrance it is instantly devapoured and exhausted without back-pressure. The receptacle is also provided with a suitable self-acting valve arrangement to let off the intensely expanded and heated gases when they arrive at any such pressure above that of the steam and water compartment as may be desired, so that they will let off the gases through self-acting back-pressure valves along with the steam that may be required for motive power or other use, without the power of the steam or water finding its way into the fire receptacle.

The fire and steam compartments are constructed in such a manner that in the event of any carelessness in letting the steam exceed the working pressure it is conveyed to the converting chamber referred to, where it is devapoured. The fire compartment is constructed in such a manner as to be self-acting, or regulated at will, so that the inlet of compressed air, or any other equivalent containing a good density of oxygen, should not return against its own pressure. The self-acting air inlet is made so as to create the most intense heat in the fire compartment without injury to the inlet contrivance (it being placed in the feed water tank), where the junction of compressed air, or other oxygen gases, meet the dense hydrogen generated in the fire receptacle. The air inlet contrivance is made self-acting by a governor, in such a way as to be reversible in case the water in the steam compartment should fail to keep up its proper level, and thus force the water into the steam compartment, at the same moment putting a stop to combustion in the fire compartment, and so preventing the possibility of an explosion. The fuel-feeding is constructed with a dial arrangement in such a manner as to be self-acting (say) every three, five, nine, or twelve hours, or as ex-

perience may suggest, since it can be set to change at the will of the attendant. The apparatus in its entirety can be applied to existing boilers, vertical or otherwise, in duplicate, so that when the feeling of fuel is requisite no material difference is observed in the steam pressure in the steam generator. In portable engines where the patent is applied the steam cylinder is fixed on the boiler, as usual, and the variations in the cut-off are effected by the governor acting on a vibrating link hinged to a fixed centre, the beam lever causing the valve, or eccentric-rod, to rise or fall to vary the cut-off, according to the power exerted by the engine. The crank-shaft works the pump for compressing the air for the injector, by which the products of combustion are drawn off and forced into the fire-receptacle; the latter is supplied with fuel by means of a hopper, rotary feed compartment, barrel, and shovel, worked by hand levers. The compressed air from the pump is conveyed by a pipe to the injector, which is in communication with the under side of the fire injector, by another pipe. The back pressure valve is fixed on the receptacle, and when the pressure in the chamber exceeds that of the steam the gases escape into the boiler, thereby neutralising the carbonic acid or other injurious gases given off by the fuel. The exhaust steam is conveyed into a hollow arm, and from thence into a cone, by which it is devapourised.

The invention appears to be a truly valuable one, and cannot fail to be adopted by colliery proprietors, a great many of whom are now adopting air-power for drawing coal along the levels of mines. It appears to be also applicable for underground railways, such as the Metropolitan, tunnels, and other places or works requiring steam-power, but where fire and smoke must not be exposed to the atmosphere, or where exhaust steam is necessary to be converted into dry air in lieu of vapour, or for any other use where steam-power is requisite at a minimum cost.

#### THE PERMANENCE OF VEINS IN LIMESTONE.

A highly-interesting account of fissure veins in stratified limestone worked 1000 ft. deeper than the Comstock is given by Mr. HENRY SEWELL, in the "Utah Mining Gazette." He states that the experience in silver mines in stratified limestone formations in Chile dates back as far as 1808, at which period the silver mines of Agua Armada, province of Huasco, were discovered. The celebrated mines of El Doctor, in Mexico, likewise in similar formations, were worked for about 30 years, and produced some \$40,000,000 worth. Those of Chile were vigorously worked from 1836 to 1848, and kept some 12 mills constantly supplied. The crushing was carried on by so-called Chilian mills and the patio amalgamation. In 1838, Mr. Stevenson, an English gentleman, was the first for making an improvement for working these free-milling ores, and invented the tinas, or pan, system of amalgamation, which was exported from Chile to California in after years. Everywhere he has noticed that these formations produce free-milling ores at surface, and to a depth varying from 50 to 250 feet. In one district alone in Chile, called Chanarcillo, it was ascertained by the dues paid to the Government that the amount of silver produced from these formations in about 12 years reached the sum of \$20,000,000, and this from the free-milling ores taken from surface to the depth of 250 feet. About 1849 these ores gave out completely at the above depth, and in a most sudden way, most discouraging to every mine owner, so much so that the Government gave them leave to "disfrutar," or take out all the arches or pillars that the mining laws enforce to prevent the mines from caving in, and this is only granted after the Government mine surveyors have officially notified that the mines have ceased to be productive. Sinking was continued till they went through about 280 ft. nearly perpendicular—say, 83°—which was the underlie of the lode. For this distance the vein had diminished from 6 ft. to 1 in., and in many places to a thin cleavage of not more than  $\frac{1}{8}$  in. In the next two months' sinking this narrow cleavage, or lode, changed as suddenly as it had disappeared before, to a width of 6 ft. This event took place in 1851, when the writer took the management of the mine, and continued therein till 1857. The ores in this new strike changed completely, their composition being mostly ruby silver-ores, without any trace of free-milling ores. We have in Chile exactly the same change in the copper mines, from free-smelting copper ores (carbonates and silicates, ores that can be smelted into bar copper in one operation) into sulphurites, under similar conditions of depth. At the depth of about 600 ft., where the sudden expansion of the lode took place, the writer extracted 9 $\frac{1}{2}$  tons of native silver, which produced 90 per cent. of their weight in pure metal on being melted down in the bar furnace. This kidney of native silver was surrounded by masses of pure ruby silver; 400 tons of this ore was shipped in 1851, in the brig Llewellyn, for sale at Swansea, Wales, and the average per ton was \$2000, or \$800,000 in all.

Shipments from this district continued for about four years, and the calculations shipped to Swansea were about \$25,000,000. Up to the year 1857 nothing was shipped that was under 800 ozs. to the ton. This was produced in the second bonanza, in the stratified limestone formations, and "Believer in White Pine Pockets" will be somewhat elated at these little pigmy items, which may prove useful for future guidance in White Pine. Every mine in the Chilian stratified limestone formation, especially in the district of Chanarcillo (where there are some 40 mines on the same lode) were similarly affected by the adjacent stratified and unstratified rocks, and at the same depths all throughout. In the highlands of Peru he inspected several lead mines, rich in silver, the veins averaging 4 ft. in thickness. These were also true fissure veins in stratified limestone. These had likewise the same peculiarity as those of Chile, Peru, Mexico, Spain, and the United States—that of pinching and expanding. Notwithstanding this circumstance, the old Spaniards gave these the preference to other formations, for the moment a bonanza appeared they soon became rich. The low-grade ores of other formations did not pay to work in those times with the primitive machinery employed. He contends that with all these peculiarities of contraction and expansion and their eccentricities, the limestone formations produce not only richer ores, but produce more in proportion to the amount laid out on them. The whole question reduces itself to understanding how to work them.

#### MINING NOTABILIA.

[EXTRACTS FROM OUR MINING CORRESPONDENCE.]

TREYBACKE.—The report has not reached the office in time for this day's paper, but the engine-shaft is being sunk with all dispatch, and the operations generally are going on very satisfactorily.

BAMPFYLDLE is one of the most desirable properties now before the public. The sett is extensive, the ores of each description are the richest produced in England—grey and silver copper ore, assayed by Prof. White at 63 per cent. for copper and 13 ozs. of silver to the ton of ore; red, brown, and manganous iron, from 55 to 77½ per cent.; manganese, 60 to 70 per cent. The lodes are numerous, 15 are already discovered, all are prolific in ore, producing the various kinds of metal, estimated shortly the yield to be 100 tons of copper per month, 50 tons of manganese per month, and 1600 tons of this rich iron ore weekly. The success of the company is beyond the anticipations of the proprietors, and for more extensive operations, together with economy in working, the company have laid down a tramway from their works to connect with the Devon and Somerset Railway for the transit of ore, materials, &c., to and from the mines, besides they have purchased all the houses in the village adjacent to the property for the accommodation of the additional miners to be employed. This company within 18 months of its operations paid an interim dividend for the six months at the rate of 20 per cent. per annum. The second dividend has just been declared at the same rate, and, doubtless, from the opening up and the great success of the property the future dividends will be increased, and will be something very considerable, and the shares marketable at a high rate.

LLANRWST.—The report of this valuable lead mining property, just to hand, fully confirms the opinion originally entertained by the manager of the same, which opinion was based upon his geological and mineralogical judgement. It must be very satisfactory to the proprietors that this mine is opening up so prosperously, which is demonstrated by the large heaps of lead ore now visible on the surface. Shortly the dressing floors will be laid out, with arrangements made for dressing, when the sales of ore will be a sufficient guarantee for the value of the property.

PENHALE WHEAL YOR.—An important discovery of tin has been made at this mine in the 160 fm. level, by cross-cutting from the engine-lode. The lode is 6 ft. wide, and is worth for tin fully 50% per fathom, and as there are no workings on this lode at any shallower point the lode stands while from the 160 to the adit. The discovery of a course of tin at such a depth in this neighbourhood may be looked upon as matter of considerable importance, as such discoveries in the Old Wheal Yor, which is immediately adjoining, were of a permanent character. Penhale Wheal Yor has been prosecuted in a most persevering manner, the engine-shaft having been sunk 70 fathoms without producing any tin, and the shareholders richly deserve a prize. The shares are held chiefly in London,

#### In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

**I**N the MATTER of the COMPANIES ACTS, 1862 and 1867, and of the SPEARNE CONSOLS MINING COMPANY.—Notice is hereby given, that a PETITION for the WINDING-UP of the ABOVE-NAMED COMPANY by the Court was, on the 8th day of May inst., presented to the Vice-Warden of the Stannaries by David Wise Bain, of Portreath, a creditor of the said company, and that the said petition is directed to be heard before the Vice-Warden at the Prince's Hall, in Truro, in the said county, on Tuesday, the 26th day of May inst., at Twelve o'clock at noon.

Any contributory or creditor of the company may appear at the hearing and oppose the same, provided he has given at least two clear days' notice to the petitioner, his solicitor, or his agents, of his intention to do so, such notice to be forwarded to P. P. Smith, Esq., Secretary of the Vice-Warden, Truro.

Every such contributory or creditor is entitled to a copy of the petition and affidavit verifying the same from the petitioner, his solicitor, or his agents, within 24 hours after requiring the same, on payment of the regulated charge per folio.

Affidavits intended to be used at the hearing in opposition to the petition must be filed at the Registrar's Office, Truro, on or before the 22nd day of May instant, and notice thereof must at the same time be given to the petitioner, his solicitor, or his agents.

HODGE, HOCKIN, AND MARRACK, Truro, Cornwall  
(Agents for S. T. G. Downing, Redruth, Solicitor for the Petitioner).

Dated Truro, May 10th, 1874.

#### In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

**I**N the MATTER of the COMPANIES ACTS, 1862 and 1867, and of the BUDNICK CONSOLS TIN MINING COMPANY (LIMITED).—Notice is hereby given that ALL CREDITORS of the above-named company are required, on or before the 27th day of May inst., to SEND IN their NAMES and ADDRESSES, and the AMOUNTS and PARTICULARS of their SEVERAL CLAIMS on the said company to JOHN HENRY HAMLEY, the Official Liquidator of the said company, at the Stannaries Court Office, in Truro, within the said Stannaries.

FREDERICK MARSHALL, Registrar.

Dated Registrar's Office, Truro, the 14th day of May, 1874.

#### THE CARWAY ANTHRACITE COLLIERY, SITUATE IN THE GWENDRAETH VALLEY, NEAR BURRY PORT and LLANELLY, in the County of CARMARTHEN.

**M**ESSRS. FULLER, HORSEY, SON, AND CO. are instructed by the mortgagee to SELL, BY AUCTION, at the Auction Mart, Tokenhouse-yard, London, on Thursday, June 4, at One precisely, in One Lot, a VALUABLE and EXTENSIVE ANTHRACITE COLLIERY, known as the

#### CARWAY COLLIERY,

PARTLY FREEHOLD and PARTLY LEASEHOLD, situate in the GWENDRAETH VALLEY, in the county of CARMARTHEN, with railway communication by a branch line from the Burry Port and Gwendraeth Valley Railway.

The total area of the minerals is 812 acres or thereabouts, of which 589 acres 2 roods are leasehold, subject to various moderate dear rents and royalties, the remaining 222 acres 2 roods are freehold, and include surface lands.

The colliery is now being worked, the output being about 50 tons per day. A survey has been recently made by Mr. Brunton, the eminent mining engineer, who reports that the quality of the coal is excellent: the quantity he estimates at from 28,000,000 to 30,000,000 tons of unworked coal, and the aggregate thickness of the seams about 55 feet. The coal at present is being worked by an inclined drift, but a pit is in course of sinking, called the Maesgellin pit, which, when completed, will enable a very much increased output—estimated at 300 tons per day.

A steam engine of the best description has been placed at the head of the pit, and also head gear for double cages. There is a very good stone quarry on the freehold portion of the property, many seams of ironstone and an abundance of fire-clay: 10 new cottages have been erected, 10 in course of building, and there are four wooden cottages.

There is a considerable demand for the coal, both in England and also in France, much in excess of the present output; and by a judicious outlay in extending the openings a large profit would doubtless be realised to a purchaser.

Particulars may be had of MESSRS. VANDERON, LAW, HARDY, and ASTON, solicitors, 23, Bush-lane, London; and of MESSRS. FULLER, HORSEY, SON, and CO., 11, Biliter Square, London, E.C.; from whom orders to view may be obtained.

#### FINE OPPORTUNITY FOR MAKING A FORTUNE.

**T**O BE SOLD, PART OR ENTIRE (former preferred) of a COLLIERY ROYALTY, of about 170 acres, in NORTH WALES. The pit is sunk 40 yards deep to the seam containing the best description of Cannel. There are six other seams of good coal (the first being King Coal, only 14 yards under it known to be beneath this seam). Its situation being half a mile from a railway station, and also admirably adapted for land sale, close to excellent roads, the working expenses, royalty, rent, and outlay small for a probable get in a few weeks of 400 tons daily at an almost fabulous profit, render the present undertaking one well worthy the immediate attention of capitalists, coal-dealers, gas manufacturers, or colliery proprietors.

Address, "Q. E. D.", care of Mr. Watson, 15, Fenwick street, Liverpool.

#### TO INVESTORS.

**T**WO SPLENDID OPPORTUNITIES SUCH AS ARE SELDOM MET WITH—the one, a COTTON SPINNING CONCERN, ready for IMMEDIATE WORKING, and stocked with the most VALUABLE MACHINERY, principally new—the other, a LARGE IRONMONGERY BUSINESS, at present and for the past 22 years in ACTIVE TRADE, and which has always realised very large profits—ARE NOW OFFERING.

Bona fide investors only are invited to apply for interests therein. Adventitious investors, speculating with the object of receiving promotion money, will not be treated with.

Those only who desire to secure a permanent income on a moderate investment, need apply personally, or address by letter—

MR. HALLAS, PUBLIC ACCOUNTANT, 32, FAULKNER STREET, MANCHESTER,

Who will furnish the fullest information, and to probable investors furnish letters of introduction to view the properties.

#### DISCOVERY OF LEAD MINES IN ABERDEENSHIRE.

**A** VALUABLE LEAD LODE has recently been discovered on the property of the Marquis of HUNTLY, in ABERDEENSHIRE. The pit is sunk 40 yards deep to the seam containing the best description of Cannel. There are six other seams of good coal (the first being King Coal, only 14 yards under it known to be beneath this seam). Its situation being half a mile from a railway station, and also admirably adapted for land sale, close to excellent roads, the working expenses, royalty, rent, and outlay small for a probable get in a few weeks of 400 tons daily at an almost fabulous profit, render the present undertaking one well worthy the immediate attention of capitalists, coal-dealers, gas manufacturers, or colliery proprietors.

Address, "Nil Desperandum," care Mr. Watson, 15, Fenwick street, Liverpool.

#### TO CAPITALISTS OR PROMOTERS DESIRIOUS TO MAKE MONEY.

**T**O BE SOLD, a COLLIERY ROYALTY in NORTH WALES, close to rail or shipping port; several shafts partially sunk; coal fully proved of four seams of good house and steam coals in an area of upwards of 400 acres of surface. It adjoins the West Mostyn Coal Field, just successfully launched, where other under-seams (including Cannel) have been proved, in addition to the above, so that eminent engineers state that the available coal in this royalty may be 88 ft. thick. Present holder will arrange to SELL the ENTIRE to an INDIVIDUAL or COMPANY FOR WHAT IT COST HIM, dividing all profit made above, which, even in a normal state of the coal trade, must be large certain, and safe. Surveys by eminent Staffordshire and Welsh engineers have already been made.

Address, "Nil Desperandum," care Mr. Watson, 15, Fenwick street, Liverpool.

#### THE GARLIES SILVER-LEAD MINING COMPANY (LIMITED).

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**T**O BE SOLD, BY PRIVATE TENDER, the MINES, PLANT, MACHINERY, &c., &c., of the ABOVE COMPANY.

Particulars may be had on application to the Liquidator.

Tenders to be sent to the Liquidator on or before Saturday, the 30th instant.

VAUGHAN W. JONES, Liquidator.

Dated 14th May, 1874—1, Halkin's Hey, Liverpool.

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**F**OR SALE, a good 40-inch cylinder PUMPING ENGINE, 10 ft. stroke in, 9 ft. out, with 10-ton BOILER; in first-rate working order throughout.

A 15-inch cylinder WINDING ENGINE, with cage, complete, and 8-ton BOILER.

The engines can be seen on the Great Work Mine, near Helston, Cornwall.

For further particulars, apply to MR. J. WALKER TYACKE, Solicitor, Helston.

**H**AULING ENGINE FOR SALE, in about as good condition as when new, having been used only six weeks in hauling 30-cwt. loads from a dock at the rate of about 28 per hour; it has two 7-in. cylinders, and the stroke is 12 in., geared to a barrel for hauling wagons, and a rigger for driving pumps etc. The boiler is vertical, and the whole stands upon a wrought-iron table, supported upon four low wheels.

Also FOR SALE, NINE EARTH WAGONS, used only six weeks, and OTHER PLANT; also FOR SALE, a WELL BOAT, with gear to lift, carry, and drop 8-ton stones.

For particulars, apply to the Engineer, Pentewan Dock Works, St. Austell, Cornwall.

FOR SALE, ONE 50 in. cylinder PUMPING ENGINE, 10 ft.

stroke in cylinder, 8 ft. in shaft, with ONE BOILER.

ONE 24 in. cylinder WINDING ENGINE, 8 ft. stroke, ONE BOILER and DRAWING CAGE, complete.

Apply to MR. WILLIAM LANGDON, Northumberland Foundry, Launceston, Cornwall.

#### MACHINERY AND MINE MATERIALS.

**F**OR SALE, —

A 30 inch PUMPING ENGINE, with BOILER.

A 10 horse power PORTABLE ENGINE.

A 2½ horse power SEMI-PORTABLE ENGINE, on stand plate.

A WATER WHEEL, 32 feet high, 3 feet 4 inches breast, with iron axle, centres, and ring.

A WINDING CAGE.

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As Messrs. KINGSLEY and Co. are perfectly cognisant of the fact that the public have

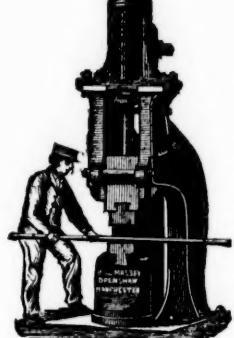
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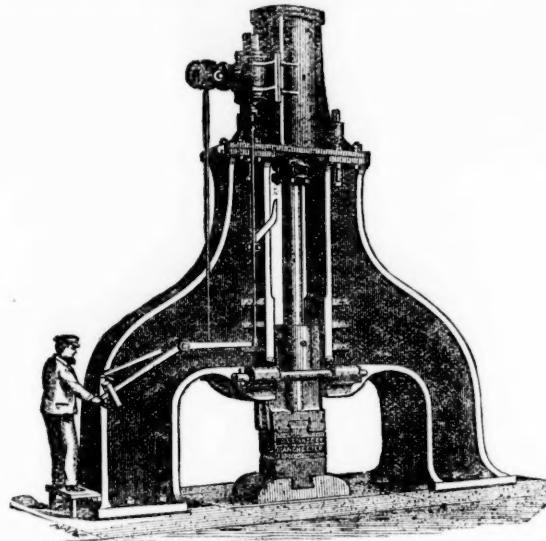
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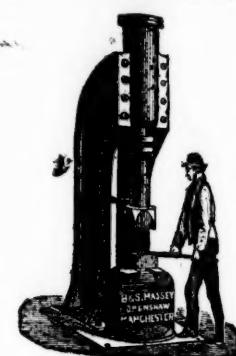


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Special Steam Stamp.



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From 60 to 100 Steam Hammers and Steam Stamps may usually be seen in construction at the Works.

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SPECIALLY SUITABLE FOR RAILWAY, QUARRY, AND MINE WORK.

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CARDIFF MEETING, 1872.

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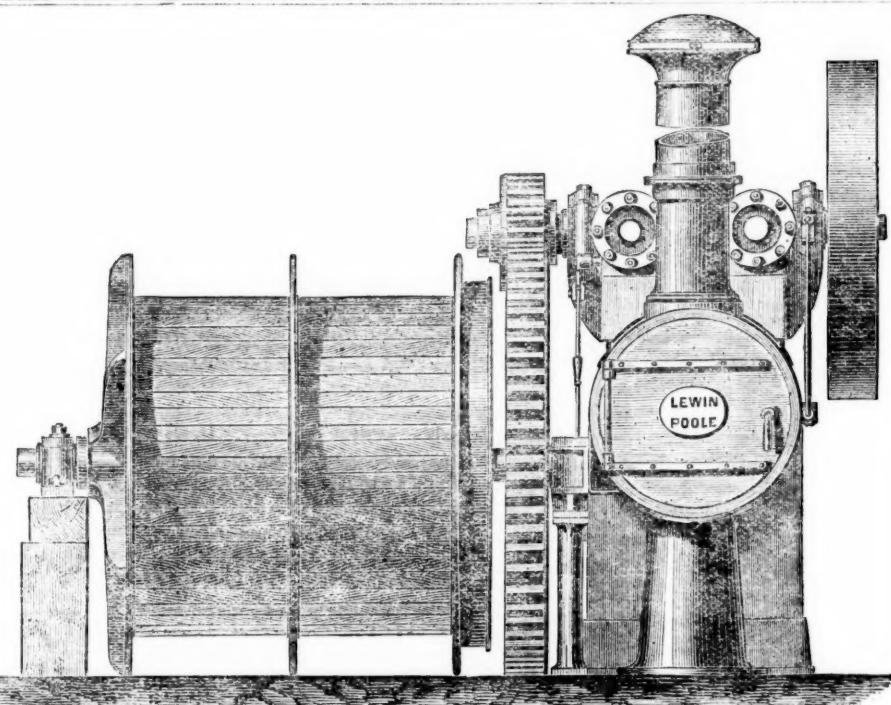
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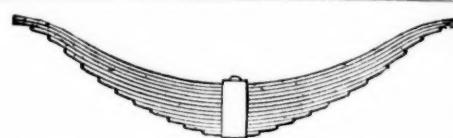
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1500 Alderley Edge, c, Cheshire*	10 0 0 ... -	11 16 8 ... 0 5 0.	Oct. 1873				
26000 Alt-y-Crib, t, Talybont*	2 0 0 ... -	0 6 ... 0 6.	Feb. 1873				
30000 Bamfylde, c, i, mn., Devon*	1 0 0 ... 5% 5% 5% 5%	0 2 0 ... 0 2 0.	June 1873				
5500 Blaen Caelan, s-l, Cardigan* (4s sh.)	3 10 0 ... -	0 10 9 ... -	-				
18000 Boscastle Downs, t, St. Just*	3 0 0 ... -	0 5 6 ... 0 2 0.	Oct. 1871				
200 Botallack, t, St. Just	116 5 0 ... 12% 40 45	619 15 0 ... 5 0 0.	Aug. 1872				
500 Bromley, *t-s, (£2000 sh. D.B.p.c.t.)	100 0 ... -	110 0 ... 0 2 3.	Jan. 1871				
4000 Brookwood, c, Buckfastleigh	1 16 0 ... -	2 14 6 ... 0 6 0.	Nov. 1873				
3248 Cargill, s-l, Newlyn	4 17 11 ... 1% 1% 1% 1%	4 16 3 ... 0 12 6.	Oct. 1872				
6400 Cashwell, t, Llanberis	2 10 0 ... -	1 4 0 ... 0 4 0.	Aug. 1872				
7500 Castle an Dinas, t, St. Columb*	2 0 0 ... -	0 10 0 ... 0 2 0.	July 1873				
1000 Corn Brea, t, Illogan	35 0 0 ... 60	308 0 0 ... 1 0 0.	Feb. 1874				
6000 Cith. & Jane, t, Penrhynhendreath	5 0 0 ... -	0 7 6 ... 0 7 6.	June 1873				
24240 Cook's Kitchen, t, Illogan	20 4 9 ... 11	11 17 0 ... 0 7 6.	Jan. 1873				
10240 Devon Gt. Consols, t, Tavistock*	0 12 0 ... 1% 1%	116 10 0 ... 12 0.	May 1872				
42496 Dolcoath, t, Camborne	10 14 10 ... 47% 45 47%	104 4 2 ... 0 12 6.	Jan. 1874				
10000 East Balladown, t, Sancroft	1 0 0 ... -	0 2 11 0 ... 0 5 0.	Feb. 1874				
6144 East Caradon, c, St. Cleer	2 14 6 ... 1	14 19 0 ... 0 2 0.	Oct. 1872				
300 East Darren, t, Cardiganshire	32 0 0 ... -	221 10 0 ... 1 0 0.	April 1874				
6400 East Pool, t, Illogan	0 9 9 ... 10	13 11 3 ... 0 2 6.	May 1873				
8000 Exmouth, s-l, Christow	0 7 6 ... -	0 1 0 ... 0 1 0.	May 1873				
2500 Foxdale, t, Isle of Man	25 0 0 ... -	80 15 0 ... 0 10 0.	Sept. 1872				
4000 Glasgow Cara, c* (30,000 £1 p., 10,000 15s. p.)	1% 1% 1% 1%	0 4 10 0 ... 0 1 0.	Sept. 1873				
15000 Great Laxey, t, Isle of Man	4 0 0 ... -	15 17 0 ... 0 6 0.	Apr. 1874				
25000 Great West Van, t, Cardigan*	2 0 0 ... -	0 1 0 ... 0 1 0.	Sept. 1873				
5500 Great Wheal Vor, t, Helston	40 15 0 ... 7%	19 16 0 ... 0 2 6.	June 1872				
6400 Green Hunth, t, Durham	0 6 0 ... 5%	1 8 0 ... 0 4 0.	May 1874				
1024 Herodfoot, t, near Liskeard?	8 10 0 ... 4%	62 5 0 ... 0 15 0.	Oct. 1872				
12000 Hindton Downs, c, Calstock* (1 £1 sh.)	1% 1% 1% 1%	4 3 0 ... 0 5 0.	Dec. 1872				
2500 Killakee, s-l, Tipperary	1 0 0 ... -	0 8 11% 0 ... 0 6 0.	Mar. 1873				
400 Lisharrow, t, Cardiganshire	18 15 0 ... -	562 10 0 ... 0 1 0.	Mar. 1874				
512 Lovell, t, Wendron	0 10 0 ... -	0 17 6 ... 0 1 6.	Jan. 1874				
5000 Minera Mining Co., t, Wrexham*	5 0 0 ... -	63 9 8 ... 0 4 0.	Feb. 1874				
20000 Mining Co. of Ireland, c, l, l*	7 0 0 ... 6	0 8 0 ... 0 3 6.	July 1872				
12000 North Hendre, t, Wales	2 10 0 ... -	0 12 6 ... 0 2 8.	Jan. 1874				
20000 North Levant, t, St. Just	11 9 6 ... 3%	4 13 0 ... 0 12 0.	Sept. 1873				
6000 Old Treburchett, s-l, ordinary shares	1 0 0 ... -	0 9 0 ... 0 9 0.	Feb. 1874				
4000 Old Treburchett, s-l, (10 per cent. pref.)	0 10 0 ... 2%	0 10 0 ... 0 10 0.	Feb. 1874				
6694 Pen-an-dreys, t, Redruth	8 2 0 ... -	0 5 0 ... 0 5 0.	Nov. 1871				
6000 Penhalis, t, St. Agnes	3 0 0 ... 3	3 3 0 ... 0 2 0.	Jan. 1874				
6000 Penstruhel, t, Gwennap	2 0 0 ... -	0 1 0 ... 0 1 0.	Sept. 1873				
6000 Phoenix, t, Linkinhorne	4 13 4 ... 4	39 19 10 ... 0 4 0.	Nov. 1871				
1772 Pol-tro, t, St. Agnes	15 0 0 ... -	1 12 6 ... 0 5 0.	Mar. 1874				
12000 Tankerville, t, Salop*	6 0 0 ... -	0 5 0 ... 0 5 0.	Oct. 1872				
30000 Terras, t, St. Austell*	1 0 0 ... -	0 3 0 ... 0 1 0.	Oct. 1872				
6000 Timcroft, c, t, Pool, Illogan	9 0 0 ... 33	29 31 ... 47 3	May 1874				
6000 Trumpet Consols, t, Helston	6 5 0 ... -	1% 2 ... 1% 2	9 11 0 ... 0 10 0.	Nov. 1872			
15000 Van, t, Llanidloes*	4 5 0 ... 30	25 27 12 ... 12 9 6	Apr. 1874				
3000 W. Chiverton, t, Perranzabuloe	10 0 0 ... -	34% 34% 34% 34%	52 10 0 ... 0 5 0.	June 1873			
2048 West Wheal Frances, t, Illogan	27 3 9 ... 15	12 14 ... 3 2 6.	Oct. 1872				
512 West Basset, t, Illogan	5 2 6 ... -	35 ... 25 30	638 10 0 ... 1 10 0.	Aug. 1872			
4256 West Kite, t, St. Agnes	5 4 6 ... -	8 8 4 ... 11 11 6	0 4 0.	Mar. 1874			
896 Wheal Margaret, t, Trelawnyd	15 17 6 ... 1%	8 2 3 ... 0 10 0.	May 1872				
10000 Wheal Mary, t, St. Dennis*	5 0 0 ... -	0 1 0 ... 0 1 0.	Jan. 1873				
80 Wheal Owles, t, St. Just	70 0 0 ... -	522 10 0 ... 4 0 0.	Aug. 1872				
12000 Wheal Russell, c, Tavistock	1 0 0 ... -	0 2 9 ... 0 0 9.	Mar. 1874				
15000 Wheal Tregoss, t, Roche	1 0 0 ... -	0 1 0 ... 0 1 0.	Jan. 1873				
16000 Wheal Whisper, t, Warleggan*	1 0 0 ... -	0 1 6 ... 0 0 6.	May 1873				
25000 Wicklow, c, sud, t, Wicklow	2 10 0 ... -	34% 34% 34%	52 9 0 ... 0 2 6.	Mar. 1872			

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30000 Almada and Trito Consols, s-l*	1 0 0 ... 1	0 4 3 ... 0 1 0.	May 1873		
20000 Australian, c, South Australia*	7 7 6 ... -	11 6 ... 0 2 0.	July 1873		
10000 Battle Mountain, *c, (6240 part pd.)	5 0 0 ... -	0 10 0 ... 0 10 0.	Nov. 1872		
15000 Birdseye Creek, g, California*	4 0 0 ... -	0 11 6 ... 0 2 6.	Mar. 1874		
6000 Bensberg, t, Germany*	10 0 0 ... -	0 17 4 ... 0 8 0.	July 1873		
12320 Burra Burra, c, So. Australia	5 0 0 ... -	56 0 ... 0 10 0.	Oct. 1872		
20000 Cape Copper Mining, *t So. Africa.	7 0 0 ... 30	15 15 0 ... 0 1 0.	Mar. 1874		
14000 Cedar Creek, g, California*	6 0 0 ... -	0 5 0 ... 0 2 6.	June 1873		
30000 Central American Association*	0 15 0 ... -	0 6 0 ... 0 1 0.	July 1863		
15000 Chicago, s, Utah*	10 0 0 ... -	0 16 0 ... 0 4 0.	Sept. 1873		
21000 Colorado Terrible, s-l, Colorado*	5 0 0 ... -	0 8 0 ... 0 2 0.	Oct. 1871		
70162 Don Pedro North of the Rey*	0 10 0 ... -	0 1 0 ... 0 1 0.	Jan. 1873		
92500 Eboradorn and Aurora, s, Nevada*	10 0 0 ... -	0 1 0 ... 0 1 0.	Aug. 1872		
2352 Eldorado, g, Nova Scotia*	10 0 0 ... -	0 2 5 ... 0 15 0.	July 1872		
40000 El Dorado, s, Utah	20 0 0 ... -	3 12 0 ... 0 6 0.	Dec. 1872		
6000 Elmwood, t, Salt Lake City*	10 0 0 ... -	0 3 0 ... 0 3 0.	April 1872		
20000 Englesta, s-l, Utah*	10 0 0 ... -	0 4 0 ... 0 5 0.	July 1873		
30000 Fortuna, t, St. I., Spain*	10 0 0 ... -	0 2 4 ... 0 4 0.	Oct. 1872		
30000 Gold Run, hid.	1 0 0 ... -	0 2 4 ... 0 4 0.	Oct. 1872		
68000 Kapunda Mining Co. Australiat	1 3 0 ... -	0 2 4 ... 0 6 0.	June 1873		
20000 Last Chance, s, Utah	5 0 0 ... -	0 14 0 ... 0 2 0.	July 1873		
15000 Linares, t, Spain*	3 0 0 ... -	14 10 10 ... 0 7 6.	Mar. 1874		
7837 Lusitanian, Portugal* (45 shares)	3 0 0 ... -	1 11 6 ... 0 1 6.	Mar. 1873		
15000 Mammoth Copper-ore of Utah, c, s	10 0 0 ... -	0 5 0 ... 0 5 0.	Dec. 1872		
21000 Colorado Terrible, s-l, Colorado*	5 0 0 ... -	0 8 0 ... 0 2 0.	Oct. 1871		
70162 Don Pedro North of the Rey*	20 0 0 ... -	22 20 22 ... 14 10 11.	1 3 0.	Dec. 1873	
10000 Pontgibaud, s-l, France*	20 0 0 ... -	34% 34% 34% 34%	1 3 0 ... 0 1 0.	Jan. 1872	
10000 Port Phillip, c, Clunes*	1 0 0 ... -	3 1 0 ... 0 1 0.	Jan. 1872		
4400					